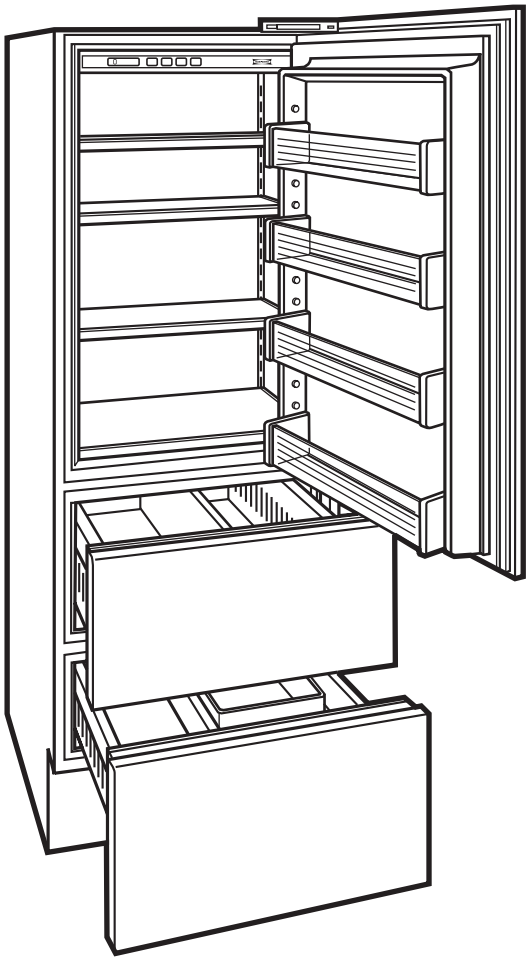
SUB-ZERO®

Technical Service Manual

Integrated (700-2) Series



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JOB AID #3756780 (Revision D - July, 2005)

SECTION 1

GENERAL INFORMATION

INTRODUCTION

This Sub-Zero Intigrated (700-2) Series Technical Service Manual (Job Aid Part #3756780) has been compiled to provide the most recent information on safety, installation, set-up, design, operation, features, troubleshooting, wiring diagrams, and repair procedures for the Intigrated (700-2) Series units. This information will enable the service technician to troubleshoot and diagnose malfunctions, perform necessary repairs, and return an Intigrated (700-2) Series unit to proper operational status.

The service technician should read the complete instructions contained in thismanual before initiating any repairs.

IMPORTANT SAFETY INFORMATION

Below are Product Safety Labels used in this manual. The "Signal Words" used are **WARNING** or **CAUTION**.

When reviewing this manual, please note these different Product Safety Labels placed at the beginning of certain sections of this manual. You must follow the instructions given in the boxes of the Product Safety Labels in order to avoid personal injury and/or product damage.

The sample Product Safety Labels below illustrate the precautions that should be taken when the signal word is observed.

⚠ WARNING

INDICATES THAT HAZARDOUS OR UNSAFE PRACTICES COULD RESULT IN SEVERE PERSONAL INJURY OR DEATH.

⚠ CAUTION

Indicates that hazardous or unsafe practices could result in minor personal injury, and/or product damage, and/or property damage.

In addition, please pay attention to the signal word ***"NOTE"***, which highlights information that is especially important for the topic being covered.

TECHNICAL ASSISTANCE

If you should have any questions regarding the 315W Series and/or this manual, please contact:

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customerservice@subzero.com

Office Hours:
7:00 AM to 7:00 PM Central Time
Monday through Friday

This manual is designed to be used by Authorized Service Personnel only. Sub-Zero Freezer Co., Inc. assumes no responsibility for any repairs made on Sub-Zero refrigeration units by anyone other than Authorized Service Technicians.

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WARRANTY INFORMATION

This page contains a summary of the *2, 5 & 12 Year Warranty* that is supplied with every 700-2 Series unit. This is followed by a summary of the two special warranties: The *Non-Residential Warranty* which applies to units installed in non-residential applications, and the *Display/Model Home Warranty* which applies to distributor or dealer's display units and units in model homes, sold three years after date of manufacture. The last entries on this page are details and notes about the warranties.

TWO, FIVE & TWELVE YEAR Warranty Summary

- Two year TOTAL PRODUCT warranty, *parts and labor.
- Five Year SEALED SYSTEM warranty, **parts and labor.
- Sixth through Twelfth year LIMITED SEALED SYSTEM warranty, sealed system **parts only.

ONE & FIVE YEAR Non-Residential Warranty Summary (Example: Office, Yacht, etc.)

- One Year TOTAL PRODUCT warranty, *parts and labor.
- Five year LIMITED SEALED SYSTEM warranty, sealed system **parts only.

ONE & FIVE YEAR Display/Model Home Warranty Summary (Display units sold three years after date of manufacture)

- One Year TOTAL PRODUCT warranty, *parts and labor.
- Five year LIMITED SEALED SYSTEM warranty, sealed system **parts only.

Warranty Details:

- ** Total Product Parts includes, but is not limited to the following:*

  Electronic Control System Components, Fan & Light Switches, Fan Motors & Blades, Defrost & Drain Heaters, Defrost Terminators, Drain Pans, Drain Tubes, Wiring, Light sockets & bulbs, Icemakers, Water Valves, Door hinges, Door closers & Cams, Compressor Electricals, etc. . .

- *** Sealed System Parts include the following:*

  Compressors, Condensers, Evaporators, Filter-Driers, Heat-exchangers, All Tubing That Carries the Freon.

  ***NOTE:** Condenser Fan Motors, Freon, Solder and compressor electricals are <u>NOT</u> considered sealed system parts.*

Warranty Notes:

- *All warranties begin at the time of the unit's <u>initial</u> installation.*
- *All Warranty and Service information collected by Sub-Zero is arranged and stored under the unit serial number. This information is now also stored under the customer's last name.*

***NOTE:** Sub-Zero still requests that you have the model and serial number available whenever contacting the factory or parts distributor.*

- *The serial number tag is located on the left side wall of the upper drawer compartment.* (See Figures 1-1, for serial tag layout)

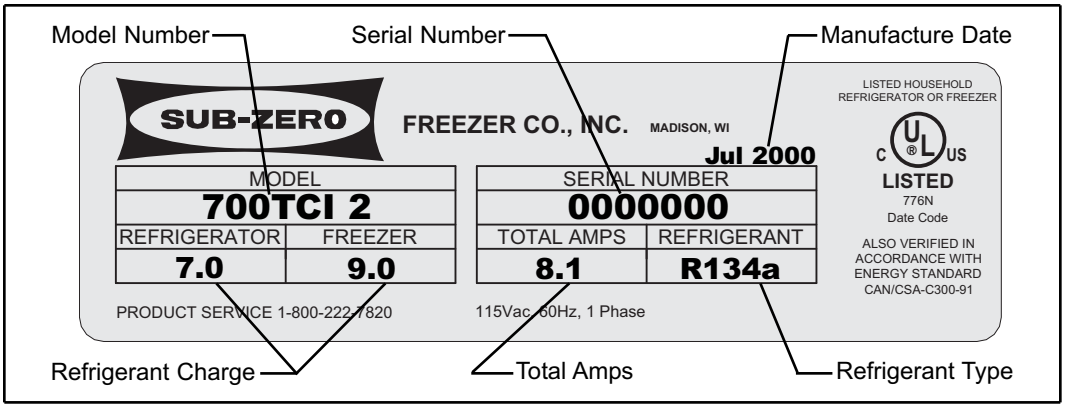


Figure 1-1. Serial Tag Layout
(*The serial number tag is located on the left side wall of the upper drawer compartment.)*

MODEL DESCRIPTIONS

The following pages briefly describe the models covered in this manual. Though there are models with and without icemaker, for the purposes of this manual, only the refrigerator models and the models with icemakers we will addressed in the succeeding sections.

Model 700TC-2 (Figure 1-2)

700 Series

Tall **C**ombo
(Combination Refrigerator / Freezer with Two Temperature Zones - Upper Refrigerator over Two Drawer Freezer)

2nd Design Build

(Unit is 80" H x 27" W x 24" D)

Model 700TCI-2 (Figure 1-2)

700 Series

Tall **C**ombo
(Combination Refrigerator / Freezer with Two Temperature Zones - Upper Refrigerator over Two Drawer Freezer)

Ice maker Included

2nd Design Build

(Unit is 80" H x 27" W x 24" D)

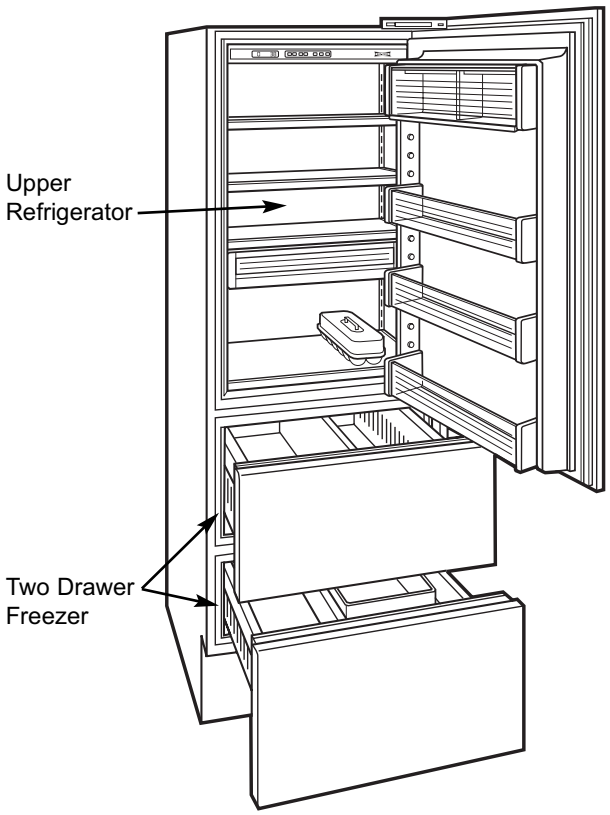


Figure 1-2. Model 700TC-2 & 700TCI-2

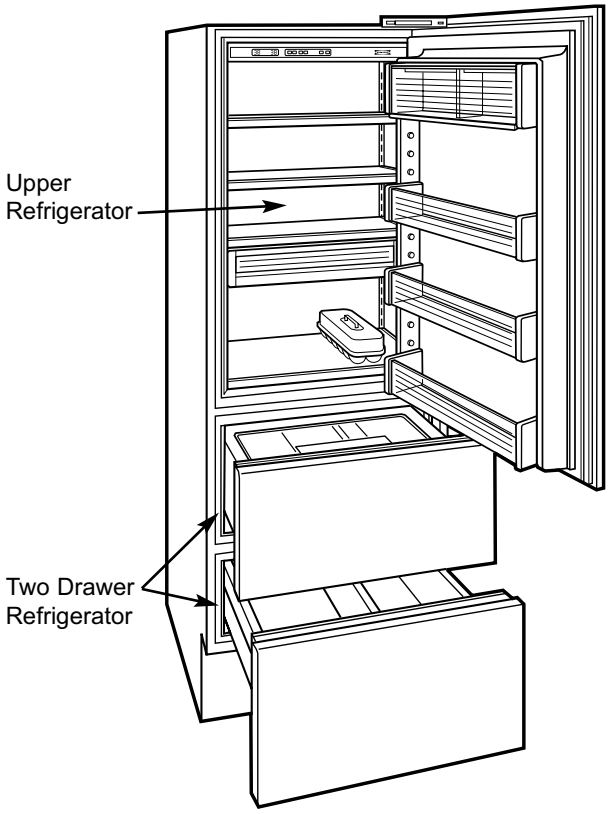


Figure 1-3. Model 700TR-2

Model 700TR-2 (Figure 1-3)

700 Series

Tall **R**efrigerator
(All Refrigerator with Two Temperature Zones - Upper Refrigerator over Two Drawer Refrigerator)

2nd Design Build

(Unit is 80" H x 27" W x 24" D)

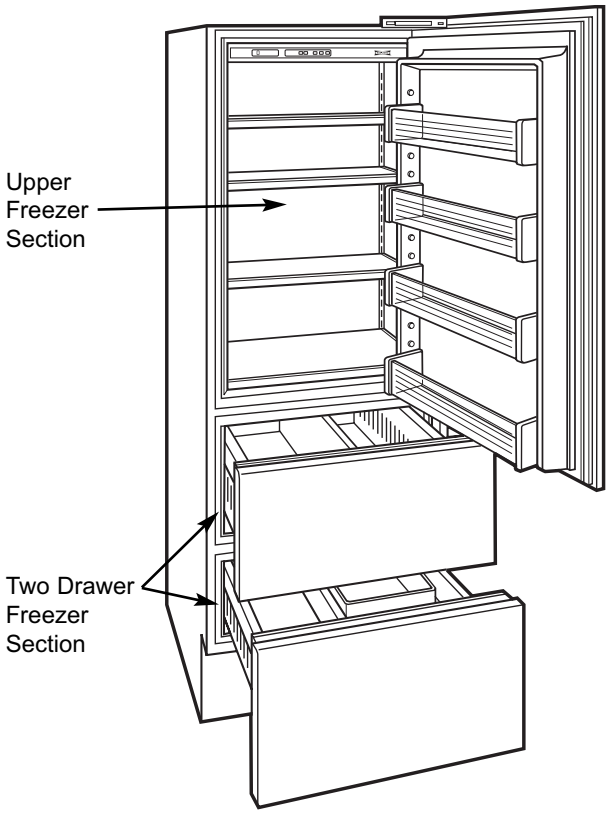


Figure 1-4. Model 700TF-2 & 700TFI-2

Model 700TF-2 (Figure 1-4)

NOTE: *This model is replaced by the 700TF-2V as of serial #1898164 (see following page).*

700 Series

Tall **F**reezer
(All Freezer with One Temperature Zone - Upper Freezer Section over Two Drawer Freezer Section)

2nd Design Build

(Unit is 80" H x 27" W x 24" D)

Model 700TFI-2 (Figure 1-4)

NOTE: *This model is replaced by the 700TFI-2V as of serial #1898164 (see following page).*

700 Series

Tall **F**reezer
(All Freezer with One Temperature Zone - Upper Freezer Section over Two Drawer Freezer Section)

Ice maker Included

2nd Design Build

(Unit is 80" H x 27" W x 24" D)

Model 700TF-2V (Figure 1-5)

NOTE: *This model replaced the 700TF-2 as of serial #1898164.*

700 Series

Tall **F**reezer
(All Freezer with One Temperature Zone - Upper Freezer Section over Two Drawer Freezer Section)

2nd Design Build

Variable Speed Compressor

(Unit is 80" H x 27" W x 24" D)

Model 700TFI-2V (Figure 1-5)

NOTE: *This model replaced the 700TFI-2 as of serial #1898164.*

700 Series

Tall **F**reezer
(All Freezer with One Temperature Zone - Upper Freezer Section over Two Drawer Freezer Section)

Ice maker Included

2nd Design Build

Variable Speed Compressor

(Unit is 80" H x 27" W x 24" D)

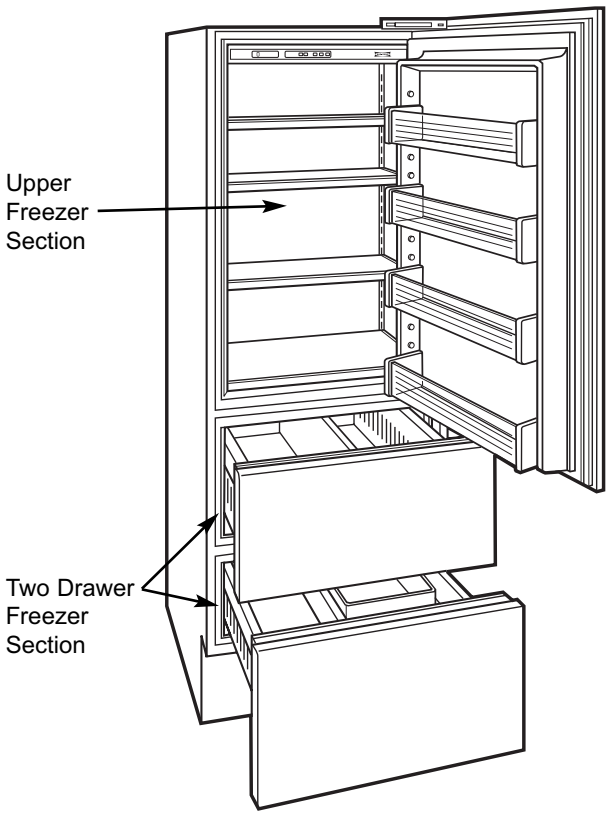


Figure 1-5. Model 700TF-2V & 700TFI-2V

Model 700BR-2 (Figure 1-6)

700 Series

Base **R**efrigerator
(All Refrigerator with Two Temperature Zones - Upper Drawer and Lower Drawer)

2nd Design Build

(Unit is 80" H x 27" W x 24" D)

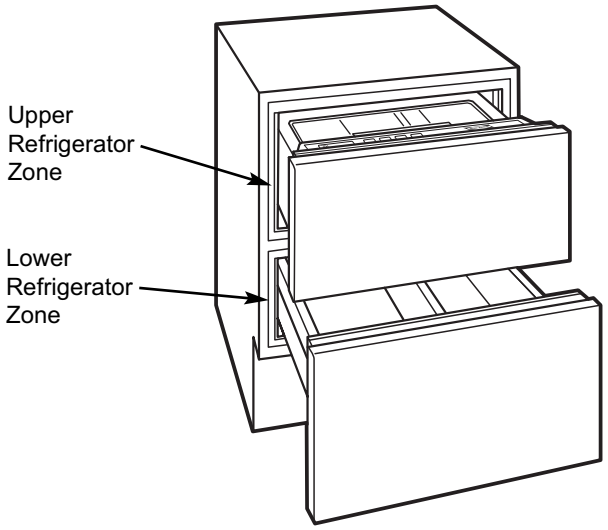


Figure 1-6. Model 700BR-2

Model 700BF-2 (Figure 1-7)

700 Series

Base **F**reezer
(All Freezer with One Temperature Zone for Both Drawers)

2nd Build Design

(Unit is 34" H x 27" W x 24" D)

Model 700BFI-2 (Figure 1-7)

700 Series

Base **F**reezer
(All Freezer with One Temperature Zone for Both Drawers)

Ice maker Included

2nd Build Design

(Unit is 34" H x 27" W x 24" D)

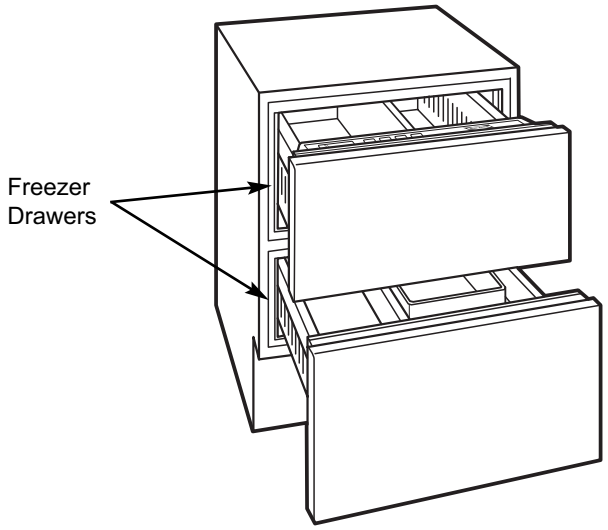


Figure 1-7. Model 700BF-2 & 700BFI-2

SECTION 2

INSTALLATION INFORMATION

INSTALLATION CONSIDERATIONS

This section covers some of the more common installation issues seen by a service technician. An improper installation, though not a valid service issue, has the potential to lead to a customer placing a call for service. Installation related customer complaints could include, but are not limited to: Unit leveling, unit movement, door misalignment, doors and drawers not sealing, internal frost or condensation, warm compartment temperatures, exterior condensation, etc.. .

NOTE: *If additional installation information is needed, refer to the complete Installation Manual and/or installation video, or contact the Sub-Zero Technical Assistance Department.*

⚠ WARNING

UNIT COULD TIP FORWARD UNDER CERTAIN LOAD CONDITIONS. FAILURE TO INSTALL ANTI-TIP COMPONENTS AND EXTEND LEVELERS TO THE FLOOR ACCORDING TO INSTALLATION MANUAL COULD RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

Unit Leveling

NOTE: *The kickplate/grille must be removed before leveling (See Figure 2-1). If the unit has already been anchored to the cabinets, the side molding strips must be removed and the anchor screws must be extracted from the unit to cabinet brackets before leveling (See Figure 2-2). These components must be reinstalled after leveling.*

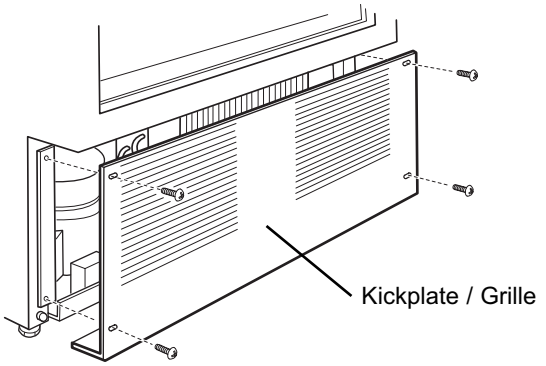


Figure 2-1. Kickplate/Grille Removal

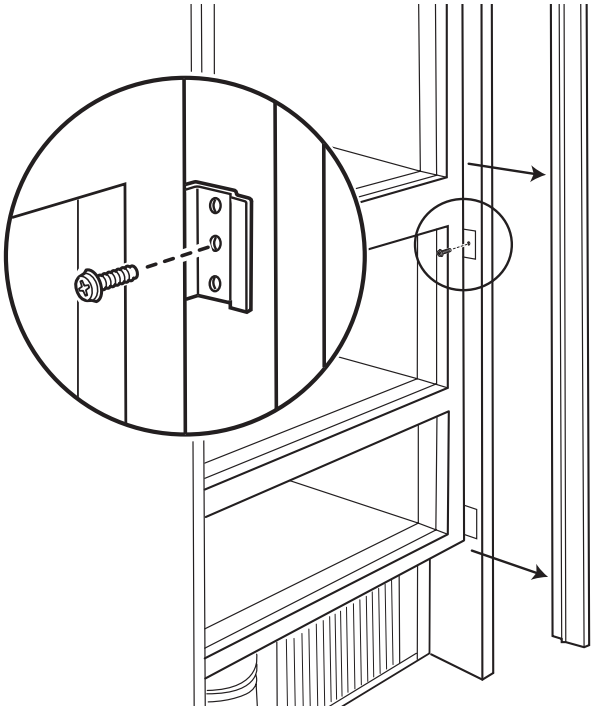


Figure 2-2. Side Molding & Bracket

To level the unit, turn the front leveling legs counterclockwise to raise the front or clockwise to lower it. To assist in turning the front leveling legs up or down, use a standard straight-blade screwdriver and place it in the foot of the front leg, then rotate the leveler foot in the desired direction (See Figure 2-3).

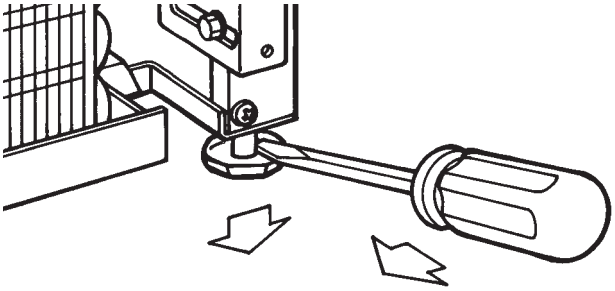


Figure 2-3. Adjusting Front Levelers

The rear levelers are adjusted from the front of the base by turning the Phillips head adjusting screw. The long adjusting screw reaches all the way to the rear leveler assembly. Turn the screw clockwise to raise the rear or counterclockwise to lower it (See Figure 2-4).

NOTE: *The rear leveling legs will only move 1/16" for every 18 revolutions of the Phillips head screw. Do not over torque. Use the lowest torque setting on any power screwdriver. Do not turn rear leveling legs by hand, doing so will damage the assembly.*

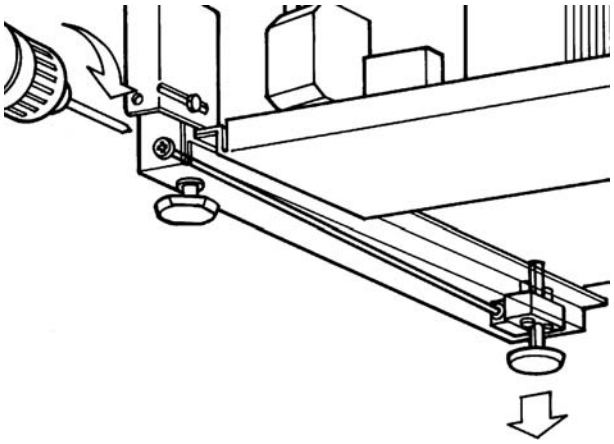


Figure 2-4. Adjusting Rear Levelers

Door and Drawer Adjustment

The doors and drawers on 700-2 Series units are non-adjustable. Instead, the door and/or drawer panels must be adjusted if there is an alignment problem. Refer to the Installation Manual and/or installation video for panel installation and adjustment.

NOTE: *The unit must be level before attempting to adjust the door and drawer panels.*

NOTE: *If the door has problems closing, see Tall Unit Door Hinge Operation Test Procedures and Corrections at the end of the Troubleshooting Guide.*

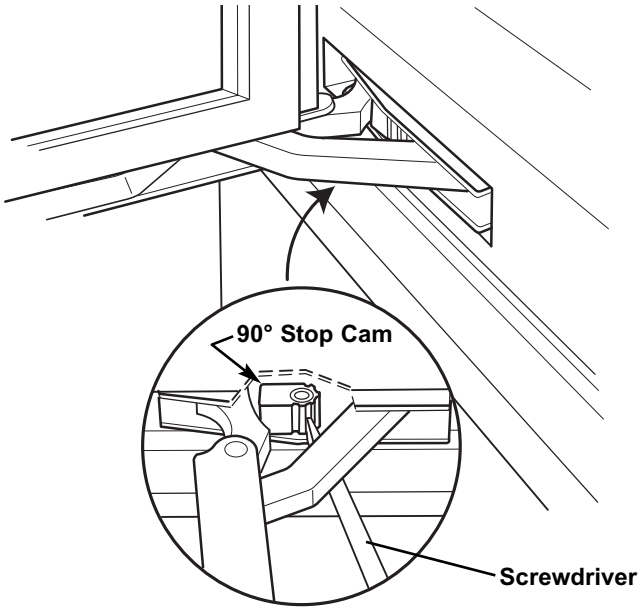


Figure 2-5. 90° Door Stop Cam

Door Stop Adjustment

700-2 Series tall units have a 90° door stop cam built into the hinge system. The 90° door stop cam is located in the center portion of each hinge. To adjust it, use a standard straight-blade screwdriver to rotate the cam until it reaches the stop point (See Figure 2-5).

NOTE: *You must make this adjustment at both bottom and top hinge.*

Dual Unit Installations

⚠ CAUTION

If two or more units are placed side by side and are 2" or less apart, a dual unit heater package must be applied to the left side of the right hand unit. Failure to install the dual unit heater package could result in exterior condensation between the units.

- If two Tall units are installed side by side and are 2" or less apart, part #TTDUAL should be utilized. (See Figure 2-6)
- If two Base units are installed side by side and are 2" or less apart, part #BBDUAL should be utilized
- If a Tall unit is installed next to a Base unit and they are 2" or less apart, part #BBDUAL should be utilized.

Complete installation instructions are supplied with the #BBDUAL and #TTDUAL packages.

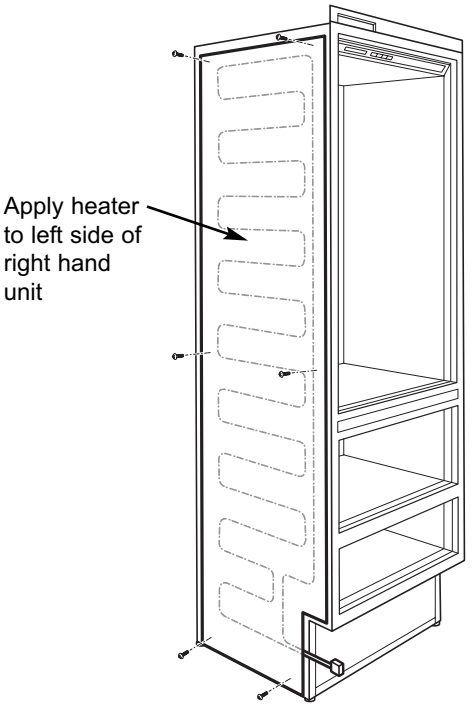


Figure 2-6. Dual Unit Heater (#TTDUAL Shown)

SECTION 3

ELECTRONIC CONTROL SYSTEM INFORMATION

NOTE: *The Electronic Control System used in an Integrated (700-2) Tall Unit differs from the Electronic Control System used in a Integrated (700-2) Base Unit. For this reason, Section 3 is divided into two parts. The first part pertains to the Control System in Tall Units. The second part pertains to the Control System in Base Units.*

ELECTRONIC CONTROL TERMINOLOGY & COMPONENT DESCRIPTIONS

All Integrated 700-2 Series units utilize an electronic control system. The electronic control system monitors, regulates and controls a variety of functions. The electronic control system also displays temperature readings, ice maker system operation, possible problems with the unit and door ajar alarm status. The table below defines some basic electronic control system terminology and describes some of the electronic control system components. An understanding of the following information is needed in order to comprehend the input operations and functions of the electronic control system.

Term/Component	Definition / Description
Control Board	The printed-circuit board (PC Board) contains the microprocessor, relays and electrical connections which control and monitor all functions and operations of the unit.
Microprocessor	An electrical component on the control board which receives electrical signals from other components, processes that information, then sends an electrical signal to the relays on the board to open or close, and other electronic components in the unit to switch on or off.
Relay	The electrical components on the control board which switch other components in the unit ON and OFF when instructed to do so by the microprocessor.
LCD (Liquid Crystal Display)	That part of the control board seen at the control panel which displays compartment temperatures, service annunciators, etc. . .
Control Panel Assembly	The information input and read-out area of the electronic control system, located at the top of the upper Compartment.
Membrane Switch	An integral part of the control panel assembly, which consists of the function keys used for all input operations to the electronic control system.
Keys (Function Keys)	The buttons on the Membrane switch used for input operations. (The keys are: UNIT ON/OFF, ALARM ON/OFF, ICE ON/OFF, WARMER, COLDER)
Annunciators	The words and numbers that are displayed at the control panel assembly. (Example: Temperature displays, alarm bell indicator, SERVICE indicator, and ICE system indicator)
Display Units	The temperatures displayed may be in fahrenheit units of measure (°F) or in celsius units of measure (°C). A series of key strokes allows this to be changed back and forth.
Set-Point	The desired compartment temperature, established by pressing the COLDER or WARMER keys.
High Offset (Cut-in)	As the compartment air temperature cycles up and down, this is the maximum compartment temperature that the electronic control system will allow before calling for cooling.
Low Offset (Cut-out)	As the compartment air temperature cycles up and down, this is the minimum compartment air temperature that the electronic control system will allow before interrupting cooling.
Thermistor (Temperature Sensor)	A resistor with which resistance changes as the temperature around it changes. For electronic control system purposes, the microprocessor measures this resistance and displays it as a temperature reading at the LCD.

BASIC 700- 2 TALL UNIT ELECTRONIC CONTROL SYSTEM

Input operations for the electronic control system are performed at the control panel (located at the top of the upper compartment), with monitoring, regulating and controlling functions taking place at the control board (located directly behind the control panel). Temperatures and possible problems with the unit are illuminated in the control panel at the LCD. This page illustrates a basic 700 Series electronic control system (Model 700TCI-2 used, See Figure 3-1). The entire electronic control system is described in greater detail on the following pages.

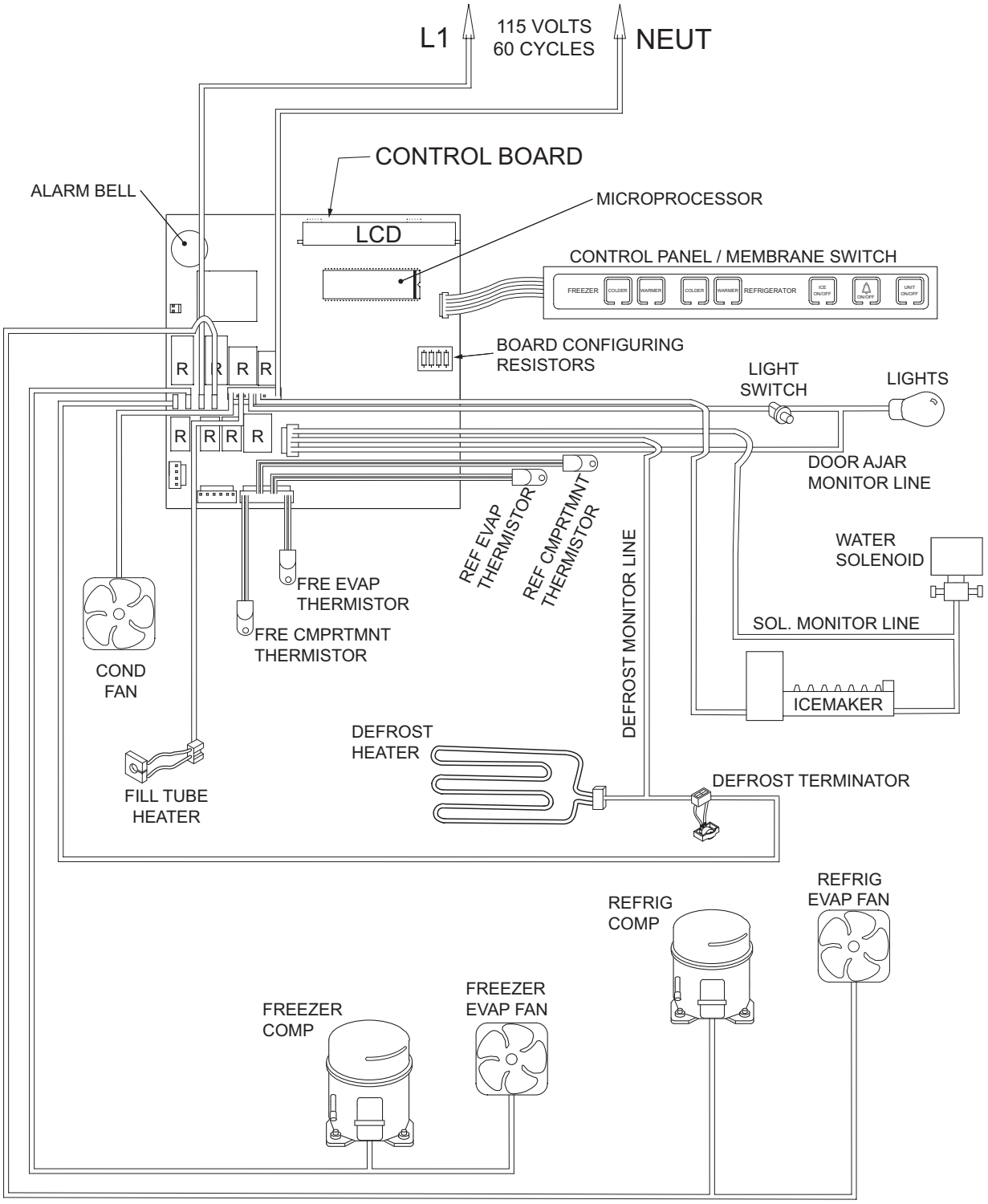


Figure 3-1. Basic 700TCI-2 Electronic Control System Diagram

700-2 TALL UNIT CONTROL BOARD LAYOUT AND SUMMARY TABLE

The electrical connection points on the 700-2 tall unit control board are labeled alphanumerically. These labels correspond with the alphanumeric control board summary table, located on all 700 Series wiring diagrams. By referencing the summary table, it is possible to identify which components are connected at which connection points on the control board. Below is a layout diagram of the control board, and a copy of a summary table. (See Figures 3-2 and 3-3)

NOTE: *All components on the control board are non-replaceable. If a problem with the control board is identified, the complete control board must be replaced.*

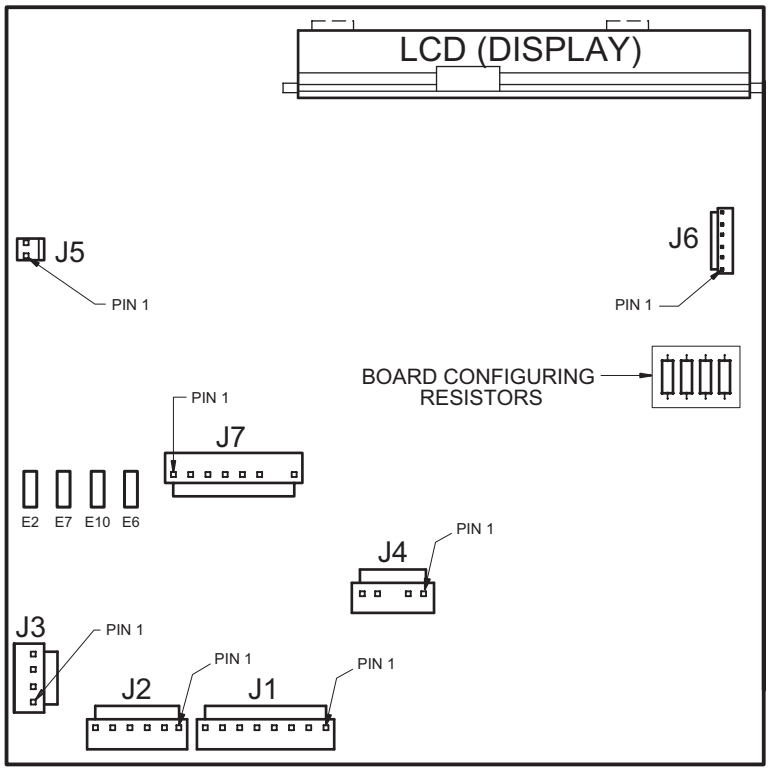


Figure 3-2. 700-2 Tall Unit Control Board Layout

CONTROL BOARD SUMMARY				
	CIRCUIT	DESCRIPTION	FUNCTION	COLOR
		120 VOLT CIRCUITS		
E2	DEF HTR	DEFROST HEATER	POWERS DEFROST CIRCUIT	BLUE
E7	FCOMP	FRZ COMPRESSOR	POWERS FRZ COMPRESSOR (DRAWERS)	PURPLE
E10	L1	POWER IN	POWER INTO BOARD	BLACK
E6	RCOMP	REF COMPRESSOR	POWERS REF COMPRESSOR (DOOR)	GRAY
J7-1	C FAN	CONDENSER FAN	POWERS CONDENSER FAN	WHITE/RED
J7-2	E FAN	NOT USED		
J7-3	IACC	ICE MAKER ACC (FILL TUBE)	POWERS FILL TUBE HEATER AND ACCESSORIES	WHITE/BLUE
J7-4	LITES	LIGHTS	POWERS LIGHTS	YELLOW
J7-5	ICE	ICE MAKER	POWERS ICE MAKER	PINK
J7-6		NOT USED		
J7-7		NOT USED(NO PIN)		
J7-8	NEU	NEUTRAL	NEUTRAL INTO BOARD	WHITE
J4-1	F DR	DRAWER LIGHTS SENSE	SENSES IF EITHER DRAWER OPEN	ORANGE
J4-2	R DR	DOOR LIGHTS SENSE	SENSES IF DOOR OPEN	ORANGE
J4-3		NOT USED(NO PIN)		
J4-4		DEF SENSOR	SENSES WHEN DEF HEATER SHUTS OFF	GRAY/WHITE
J4-5		ICE MAKER VALVE SENSOR	SENSES WATER VALVE ACTIVATION	TAN
LOW VOLTAGE THERMISTOR CIRCUITS				
J1-1	EVAP FRZ	FRZ EVAP	SENSES FRZ EVAP TEMP (DRAWERS)	ORANGE/RED
J1-2	EVAP FRZ	FRZ EVAP	SENSES FRZ EVAP TEMP (DRAWERS)	BLUE/RED
J1-3	EVAP REF	REF EVAP	SENSES REF EVAP TEMP	ORANGE/YEL
J1-4	EVAP REF	REF EVAP	SENSES REF EVAP TEMP	BLUE/YELLOW
J1-5	REF	REF COMPARTMENT	SENSES REF CABINET TEMP	BLUE/WHITE
J1-6	REF	REF COMPARTMENT	SENSES REF CABINET TEMP	BLUE/WHITE
J1-7	FRZ	FRZ COMPARTMENT	SENSES FRZ CABINET TEMP (DRAWERS)	BLUE/BLACK
J1-8	FRZ	FRZ COMPARTMENT	SENSES FRZ CABINET TEMP (DRAWERS)	BLUE/BLACK

Figure 3-3. 700-2 Tall Unit Control Board Summary Table (700TC/I-2 Summary Table Shown)

700-2 TALL UNIT CONTROL PANEL LAYOUT

Please note that in the first part of this section, an illustration of the 700TC/I-2 control panel is used most often. (See Figure 3-4)

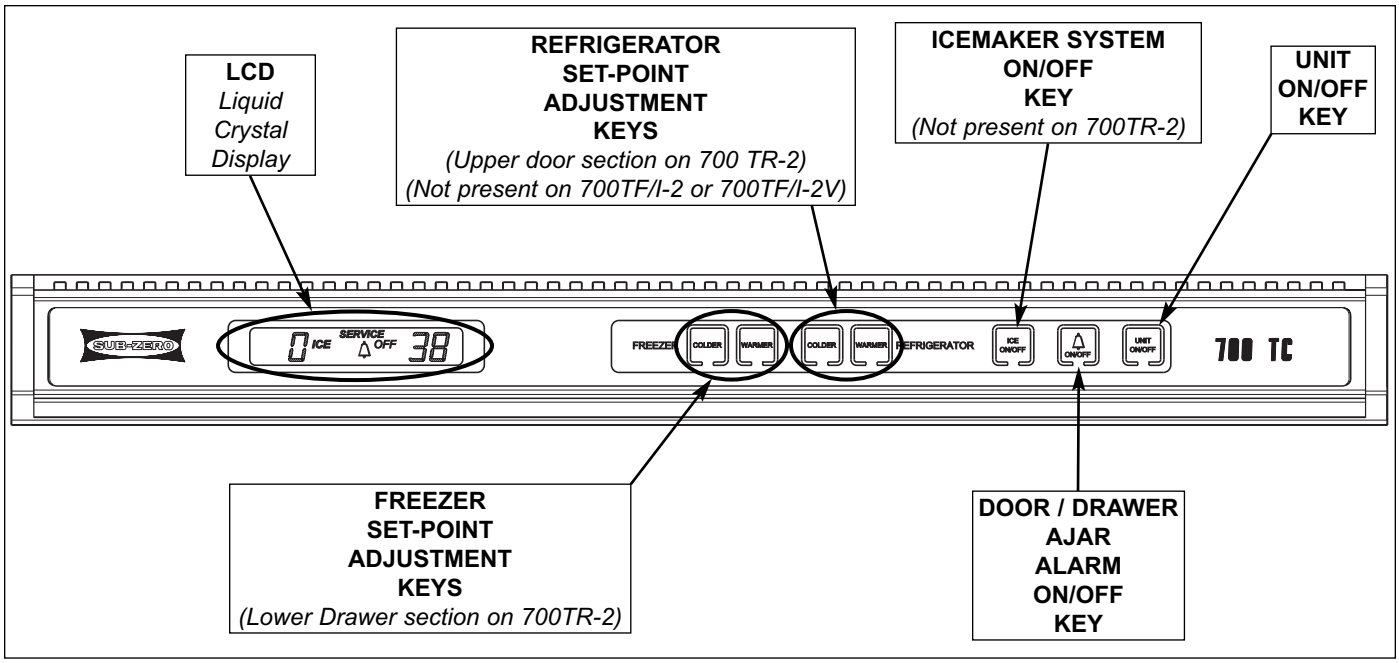


Figure 3-4. 700-2 Tall Unit Control Panel Layout *(700TC/I-2 Control Panel Shown)*

BASIC 700-2 TALL UNIT ELECTRONIC CONTROL INPUT OPERATIONS

Following are illustrations which show the basic input operations performed at the 700-2 tall unit control panel. Switching the unit ON and OFF, adjusting the set-point (temperature adjustments), switching the ice maker system ON and OFF, and enabling and disabling the door ajar alarm feature will be explained. *Please note that the 700TC/I-2 control panel is used for most illustrations of the control panel, and in most cases Fahrenheit readings are shown.*

Unit ON/OFF

All Integrated 700-2 Series units are shipped in the OFF Mode and when power is supplied to the unit, a trace of the word “OFF” is visible on the LCD. By pressing and releasing the UNIT ON/OFF key, (See Figure 3-5.) power is allowed past the control board to the rest of the unit. This will be indicated by the unit lights and LCD at the control panel illuminating.

NOTE: *Whenever the unit is switched off using the the UNIT ON/OFF key, a trace of the word “OFF” will be visible on the LCD as long as there is power to the unit.*

⚠ WARNING

WHEN IN OFF MODE, 115 VOLTS AC IS STILL PRESENT AT CONTROL BOARD!

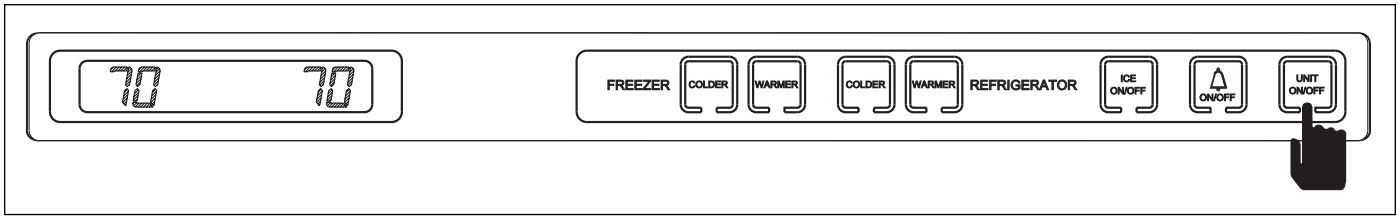


Figure 3-5. 700-2 Tall Unit ON/OFF, Press UNIT ON/OFF Key

Adjusting Set-Point (Temperature Adjustment)

To adjust the set-points, press the appropriate compartment WARMER or COLDER key on the control panel in multiple key strokes until the desired set-point is achieved. One key stroke equals a one degree (Fahrenheit or Celsius) change. (See Figure 3-6)

NOTE: *Temperature ranges are -5°F (-21°C) to +5°F (-15°C) in freezer compartment, with an initial set-point of 0°F (-18°C), and +34°F (+1°C) to +45°F (+7°C) in refrigerator compartment, with an initial set-point of +38°F (+3°C).*

NOTE: *When checking set-points, remember that the initial key stroke of the WARMER or COLDER key will change the previous set-point by one degree (Fahrenheit or Celsius).*

NOTE: *The set-point will be displayed on the LCD for 10 seconds after the last WARMER or COLDER key stroke. After the 10 second delay, the compartment temperature will be displayed. As the compartment temperature changes, the temperature displayed on the LCD will change, by no more than one degree per minute.*

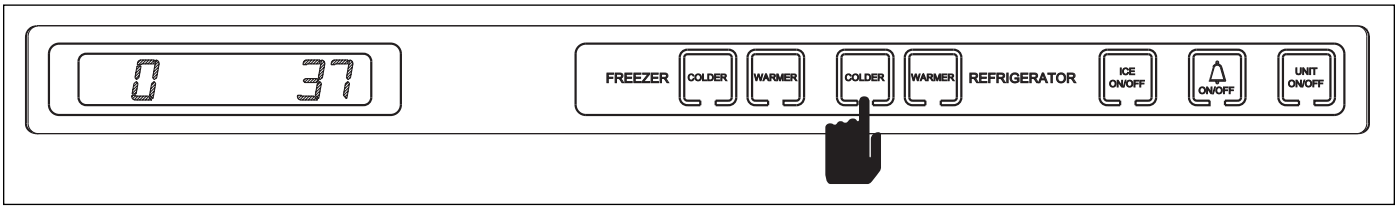


Figure 3-6. Adjusting the Set-Point - Press WARMER or COLDER Key In Multiple Key Strokes

Icemaker System ON/OFF

All Integrated 700-2 Series units are shipped with the icemaker system switched off. By pressing and releasing the ICE ON/OFF key on the control panel, power is allowed to the icemaker system, and "ICE" is displayed on the LCD. (See Figure 3-7) To deactivate the icemaker system, press and release the ICE ON/OFF key again and the "ICE" annunciator will disappear from the LCD indicating the icemaker system is off.

NOTE: *When the unit is in "Sabbath Mode," the icemaker system is de-energized. Sabbath Mode will be explained in UNIQUE ELECTRONIC CONTROL SYSTEM INPUT OPERATIONS.*

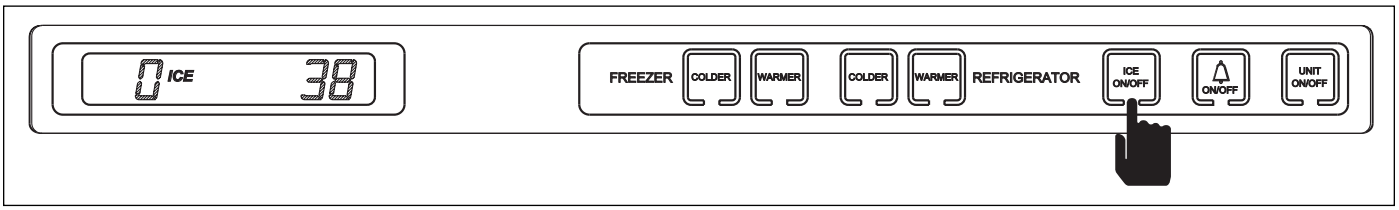


Figure 3-7. Icemaker System ON/OFF - Press ICE ON/OFF Key

Door Ajar Alarm Bell ON/OFF

All Integrated 700-2 Series units are equipped with a door ajar alarm feature. When activated the alarm will alert a customer if a door or drawer is left or stuck open. To enable the door ajar alarm feature, press and release the door ajar alarm bell ON/OFF key on the control panel. A bell annunciator will illuminate on the LCD indicating the alarm feature is active (See Figure 3-8). Now, if a door or drawer is open for 30 seconds (See "NOTE" in Figure 3-8), the bell annunciator will flash and the audible alarm will beep. To disable the door ajar alarm, simply press the door ajar alarm bell ON/OFF key and the bell annunciator on the LCD will disappear, indicating the alarm feature is off.

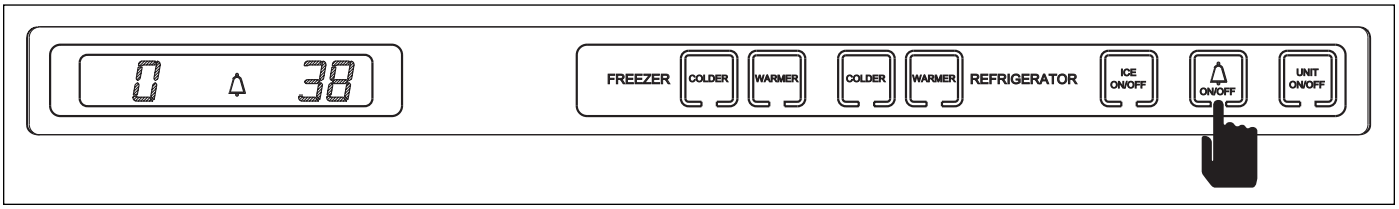


Figure 3-8. Door Ajar Alarm ON/OFF, Press Alarm Bell ON/OFF Key

FUNCTIONS OF 700 TALL UNIT ELECTRONIC CONTROL SYSTEM

The following few pages explain the monitoring, regulating and controlling functions of the electronic control system. Signal trace schematic illustrations for the model 700TC/I-2 are used to demonstrate current flow for the function being explained.

NOTE: *Only normal operating electronic control functions are described along with problems which could cause error annunciators. All possible malfunctions are addressed in the Troubleshooting Guide.*

Supply Power to the Lighting System

115 Volts are supplied to the lighting system through the control board when the unit is switched on by pressing the UNIT ON/OFF key. (See Figure 3-9.)

NOTE: *Disabling the lighting system (Sabbath Mode) is covered in Unique Electronic Control Input Operations.*

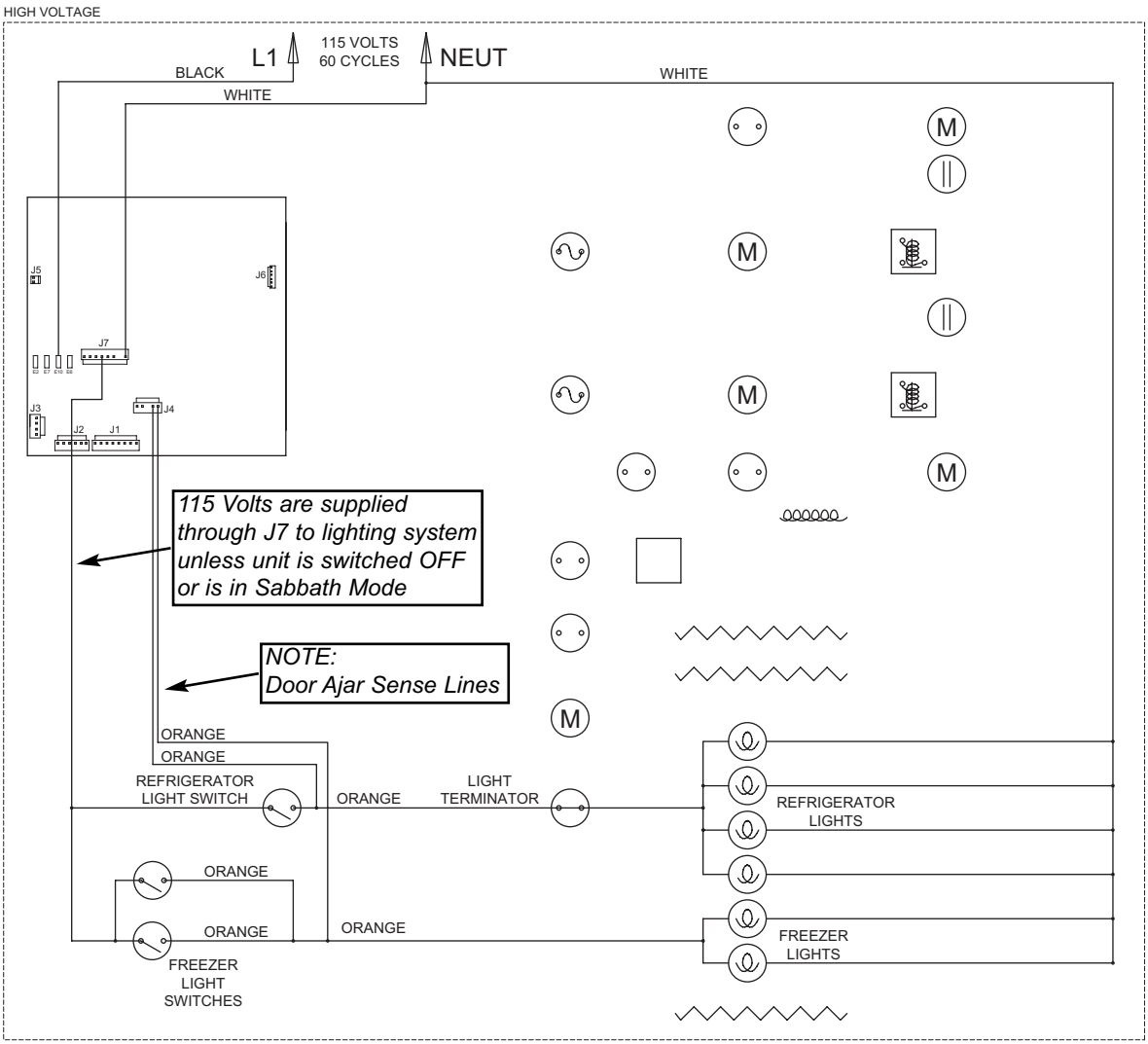


Figure 3-9. 700TC/I-2 Signal Trace Schematic of Lighting System

Monitor, Regulate and Display Compartment Temperatures (700TC/I-2, 700TR-2 and 700TF/I-2)

In the models 700TC/I-2, 700TR-2 and 700TF/I-2, the temperature signal from the thermistor in the refrigerator and/or freezer compartment is monitored by the microprocessor and then displayed on the LCD. Though the compartment air temperature does fluctuate, the LCD displays the average temperature (See Figure 3-10). When the compartment temperature reaches high offset, the microprocessor supplies power to the compressor and evaporator fan (See Figure 3-11). As the compressor and evaporator fan run, the compartment temperature drops. When the compartment temperature reaches low offset, the microprocessor interrupts power to the compressor and evaporator fan, cycling them off.

NOTE: *If the average compartment temperature changes, the temperature displayed on the LCD will change by one degree per minute.*

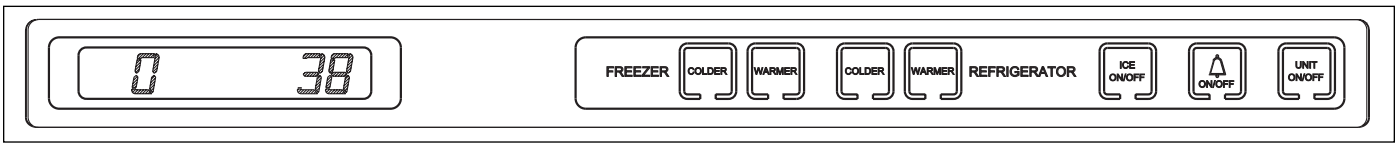


Figure 3-10. Average Compartment Temperature Displayed

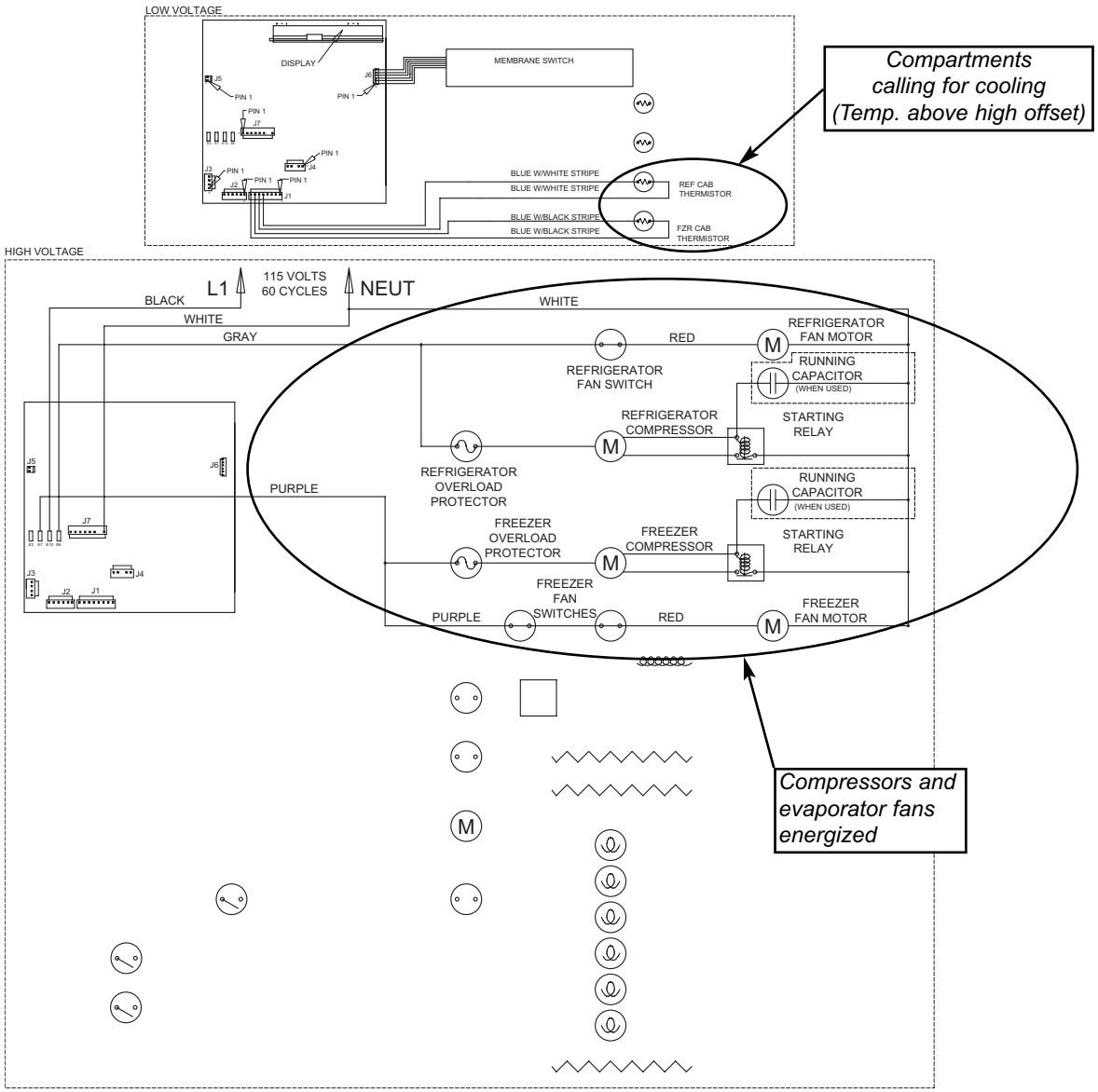


Figure 3-11. 700TC/I-2 Signal Trace Schematic (High & Low Voltage) of Regulating Temperatures

Control Variable Speed Compressor (700TF/I-2V)

Like other tall units, the temperature signal from the thermistor in a 700TF/I-2V freezer compartment is monitored by the microprocessor and then displayed on the LCD, and when cooling is called for, the evaporator fan and condenser fan are energized. But, in a model 700TF/I-2V an additional component, the compressor controller, is used to control the variable speed compressor. How this works is, the temperature difference between the compartment thermistor and the set-point is monitored by the microprocessor to determine the appropriate speed signal which is then sent via a low voltage line to the compressor controller. The compressor controller supplies a 230 volt AC, 3-phase, 50 - 150 Hz signal, based on the speed signal from the microprocessor, to the compressor. This signal causes the compressor to run at varying speeds. (See Figure 3-12) Speed commands will vary at 0, 1600, 1700, 1800, 2100, 2200, 2400, 2700, 3600 and 4000 RPM, depending on compartment temperature and set-point.

NOTE: *In the model 700TF/I-2V, the compressor, evaporator fan and condenser fan will run a great majority of the time. This is normal. These components will only cycle off during defrost and may also cycle off for short periods of time if the ambient temperature is low enough.*

⚠ WARNING

VOLTAGE EXCEEDING 200 VOLTS MAY BE PRESENT AT COMPRESSOR & COMPRESSOR CONTROLLER!

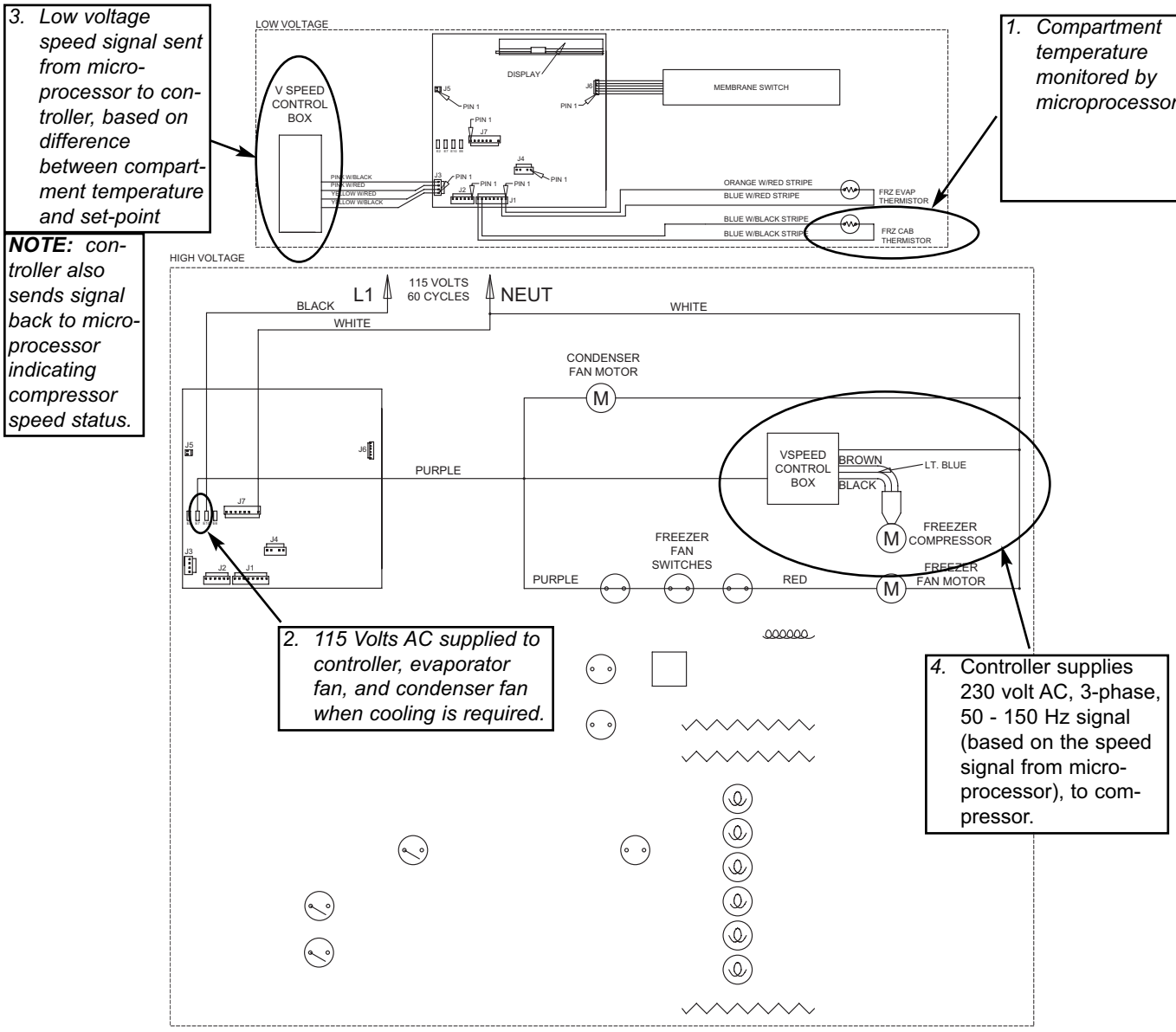

3. Low voltage speed signal sent from microprocessor to controller, based on difference between compartment temperature and set-point
NOTE: controller also sends signal back to microprocessor indicating compressor speed status.
1. Compartment temperature monitored by microprocessor
LOW VOLTAGE
V SPEED CONTROL BOX
DISPLAY
MEMBRANE SWITCH
ORANGE W/RED STRIPE
BLUE W/RED STRIPE
BLUE W/BLACK STRIPE
BLUE W/BLACK STRIPE
FRZ EVAP THERMISTOR
FRZ CAB THERMISTOR
HIGH VOLTAGE
BLACK
L1
115 VOLTS 60 CYCLES
NEUT
WHITE
WHITE
CONDENSER FAN MOTOR
PURPLE
VSPEED CONTROL BOX
BROWN
LT. BLUE
BLACK
FREEZER COMPRESSOR
FREEZER FAN SWITCHES
PURPLE
RED
FREEZER FAN MOTOR
2. 115 Volts AC supplied to controller, evaporator fan, and condenser fan when cooling is required.
4. Controller supplies 230 volt AC, 3-phase, 50 - 150 Hz signal (based on the speed signal from microprocessor), to compressor.

Figure 3-12. 700TF/I-2V Signal Trace Schematic of Variable Speed Compressor Operation

Control Condenser Fan Run

The microprocessor senses the 115 volt output supplied to both compressors. If either compressor is running, a signal is sent to the condenser fan relay on the control board to close, supplying power to the condenser fan. If both compressors are off, the condenser fan is off. (See Figure 3-13)

NOTE: *There is only one compressor on the model 700TF/I-2 and 700TF/I-2V. The condenser fan cycles with this single compressor. In the model 700TF/I-2V, the condenser fan along with the compressor and evaporator fan will only cycle off during defrost and may also cycle off for short periods of time if the ambient temperature is low enough.*

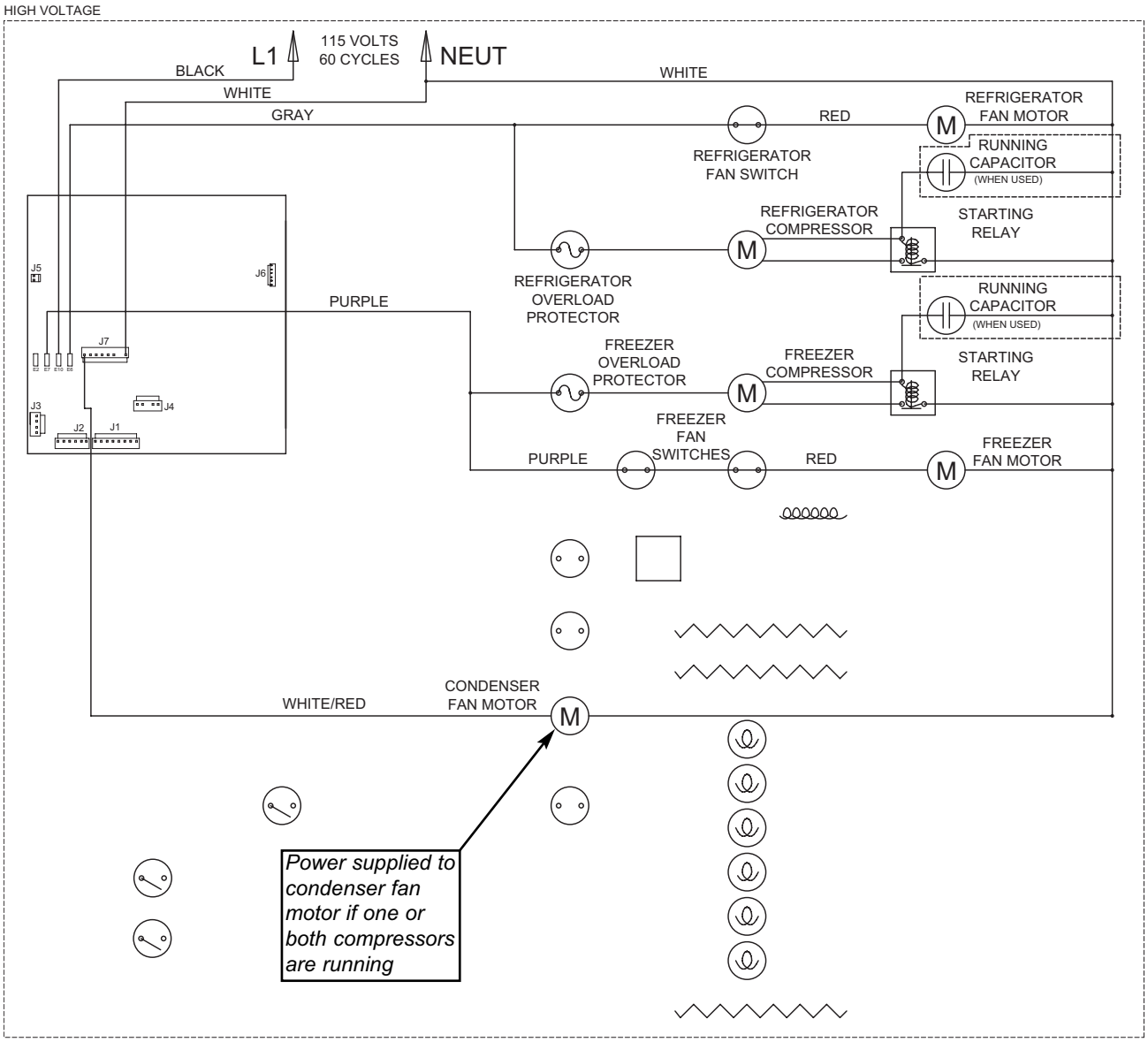


Figure 3-13. 700TC/I-2 Signal Trace Schematic (High Voltage) of Condenser Fan Operation

Monitor Compressor Run Duration, Displays If Service may be Needed (700TC/I-2, 700TR-2 and 700TF/I-2)

The microprocessor in the models 700TC/I-2, 700TR-2 and 700TF/I-2 senses the 115 volt output supplied to the compressor(s), monitoring the length of compressor run time (See Figure 3-15). If several excessive compressor run periods occur, a signal is sent to the SERVICE annunciator on the LCD to flash (See Figure 3-16).

NOTE: *A flashing SERVICE annunciator can indicate excessive compressor run or a faulty refrigerator evaporator thermistor. Diagnostic Mode (covered later in this section) should be initiated to narrow the search for possibilities. This is also covered in the Troubleshooting Guide section of this manual.*

NOTE: *To clear a flashing SERVICE error annunciator, the problem must be corrected, then the unit must be switched OFF and back ON.*

NOTE: *If the unit is ever switched OFF then back ON, the compressors will not energize for at least three minutes. This three minute minimum OFF time is used to protect the compressor and its electricals.*

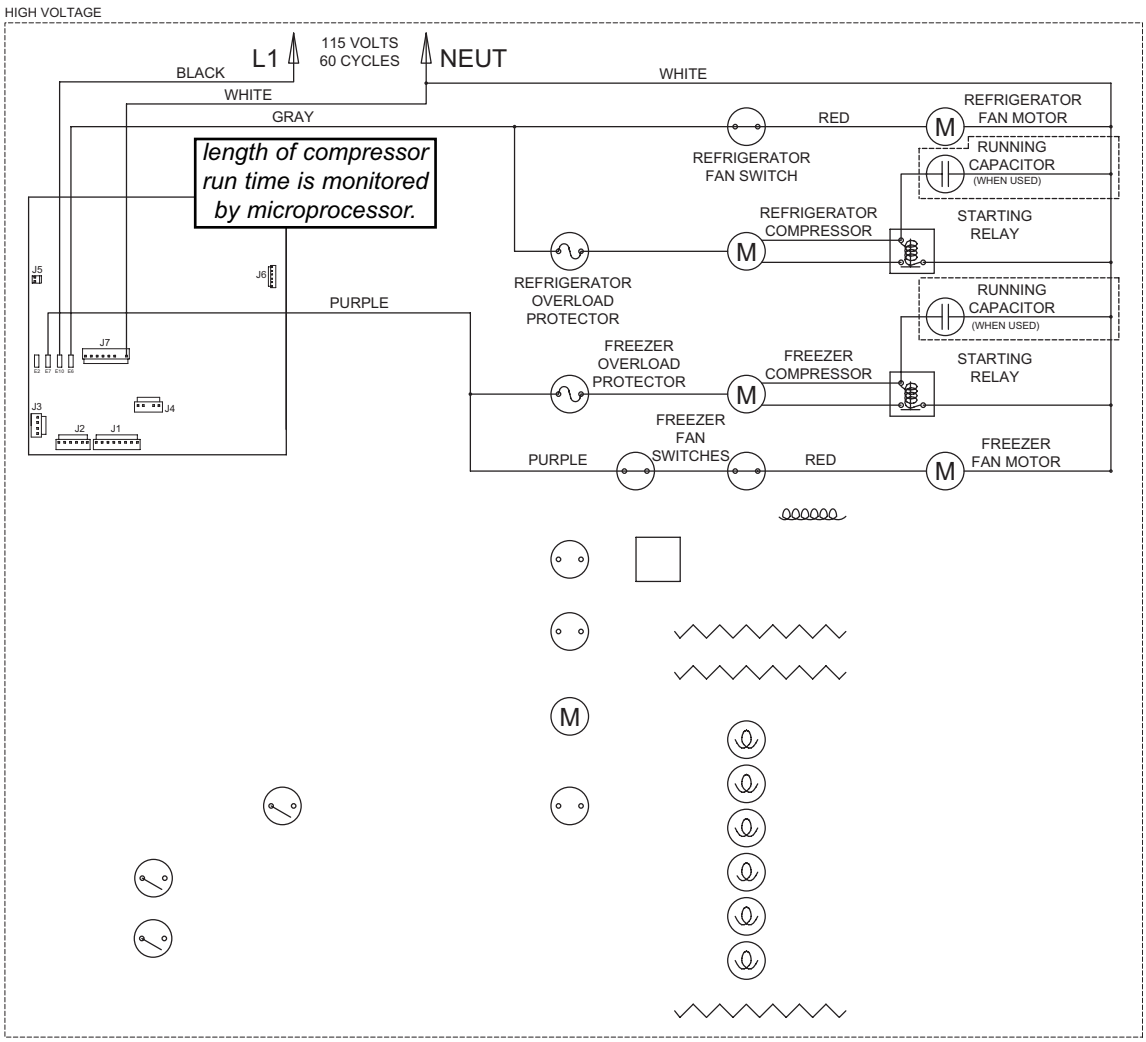


Figure 3-15. 700TC/I-2 Signal Trace Schematic (High Voltage) of Compressor Electrical System

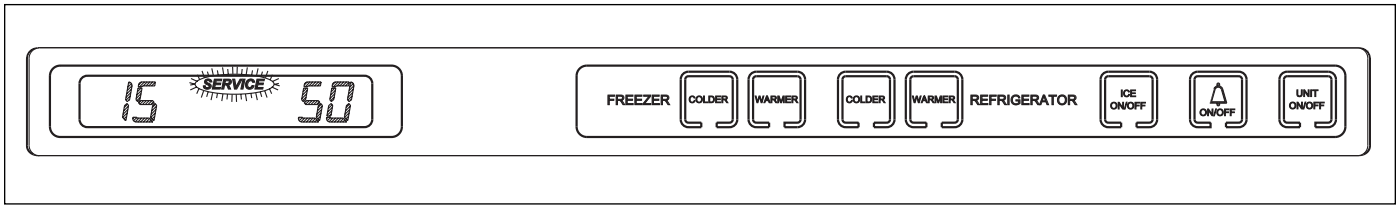


Figure 3-16. SERVICE Flashing Possibly Because of Several Excessive Compressor Run Periods Occurring

Monitor and Control "Adaptive Defrost" of Freezer Evaporator

Initially the freezer compressor will cycle-run for twelve hours (twenty-four hours in model 700TF/I-2V), after which the microprocessor sends the signal to the defrost relay on the control board to close. This supplies power to the defrost heater, and the compressor is switched off (See Figure 3-15). With the "Adaptive Defrost" technique, the length of time that the heater actually stays on to defrost the evaporator and satisfy the defrost terminator is observed by the microprocessor. The microprocessor then determines the number of hours before the next defrost. If the heater stays on for a shorter time than specified, the microprocessor increases the next defrost interval. If the heater stays on longer than specified, the electronic control decreases the next defrost interval. This is an ongoing process whereby the defrost time and the defrost interval will vary by unit use.

NOTE: *A five minute time delay/dwell follows all defrosts, except in the model 700TF/I-2V where the delay/dwell is ten minutes. The drain trough heater is energized during defrost and the delay/dwell period.*

NOTE: *The minimum defrost interval is six hours; The maximum defrost interval is eighty hours; the maximum defrost duration is twenty-five minutes.*

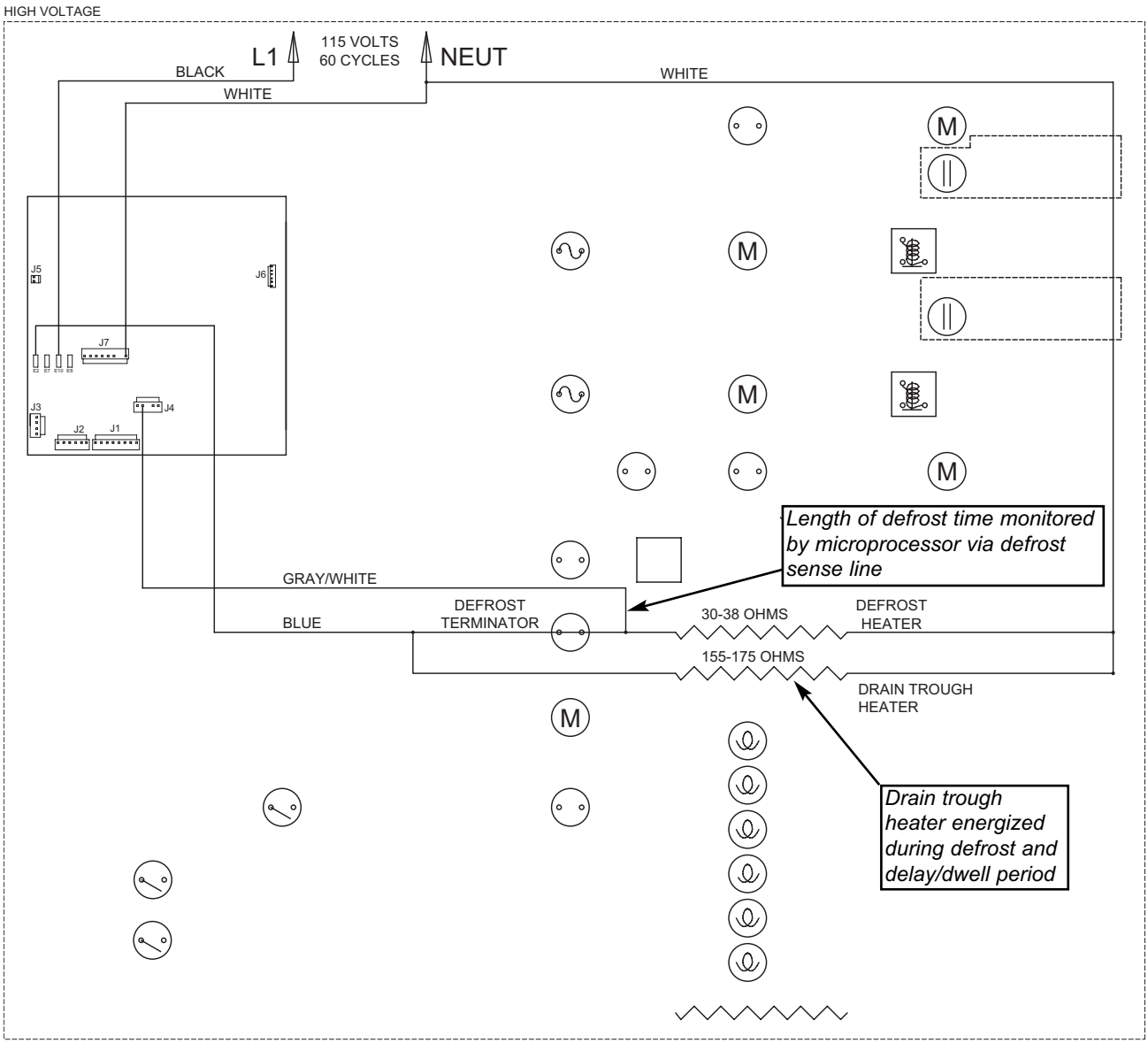


Figure 3-15. 700TC/I-2 Signal Trace Schematic (High Voltage) of Freezer Adaptive Defrost

Monitor Compressor Run Duration, Displays If Service may be Needed (700TC/I-2, 700TR-2 and 700TF/I-2)

The microprocessor in the models 700TC/I-2, 700TR-2 and 700TF/I-2 senses the 115 volt output supplied to the compressor(s), monitoring the length of compressor run time (See Figure 3-15). If several excessive compressor run periods occur, a signal is sent to the SERVICE annunciator on the LCD to flash (See Figure 3-16).

NOTE: *A flashing SERVICE annunciator can indicate excessive compressor run or a faulty refrigerator evaporator thermistor. Diagnostic Mode (covered later in this section) should be initiated to narrow the search for possibilities. This is also covered in the Troubleshooting Guide section of this manual.*

NOTE: *To clear a flashing SERVICE error annunciator, the problem must be corrected, then the unit must be switched OFF and back ON.*

NOTE: *If the unit is ever switched OFF then back ON, the compressors will not energize for at least three minutes. This three minute minimum OFF time is used to protect the compressor and its electricals.*

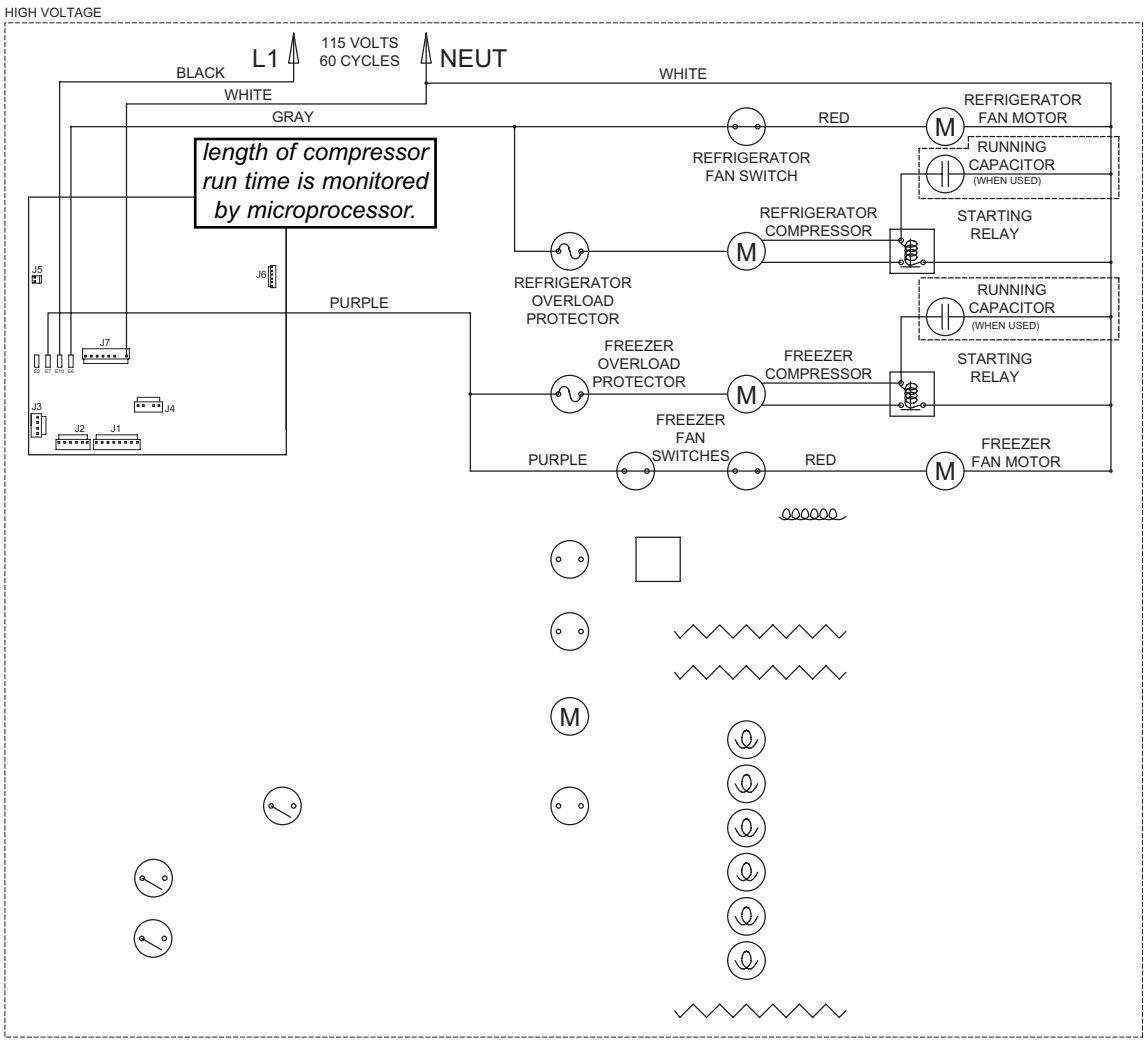


Figure 3-15. 700TC/I-2 Signal Trace Schematic (High Voltage) of Compressor Electrical System

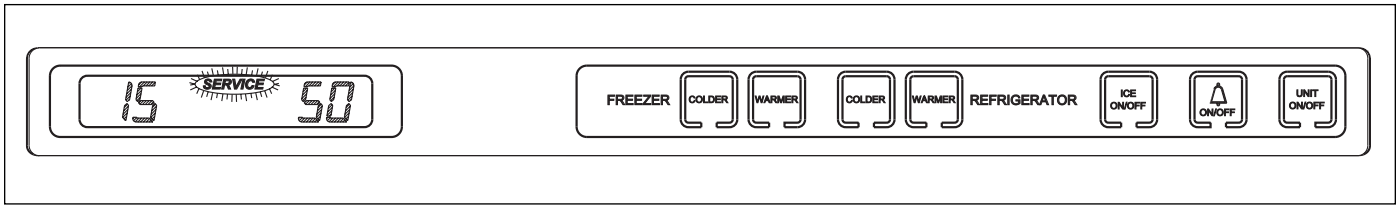


Figure 3-16. SERVICE Flashing Possibly Because of Several Excessive Compressor Run Periods Occurring

Monitor Speed Signal of Variable Speed Compressor Controller, Displays If Service may be Needed (700TF/I-2V)

The microprocessor in the model 700TF/I-2V monitors speed commands it sends to the compressor controller (See Figure 3-17). If the microprocessor continually sends commands to operate the compressor at highest speed (4000 RPM) for extended periods, a signal is sent to the SERVICE annunciator on the LCD to flash (See Figure 3-16).

NOTE: *Speed commands will normally vary at 0, 1600, 1700, 1800, 2100, 2200, 2400, 2700, 3600 and 4000 RPM.*

NOTE: *Disconnected wires between the controller and J3 on the control board could also cause the SERVICE annunciator to flash. This will be covered in the Troubleshooting Guide section of this manual.*

NOTE: *Also see NOTES on preceding page.*

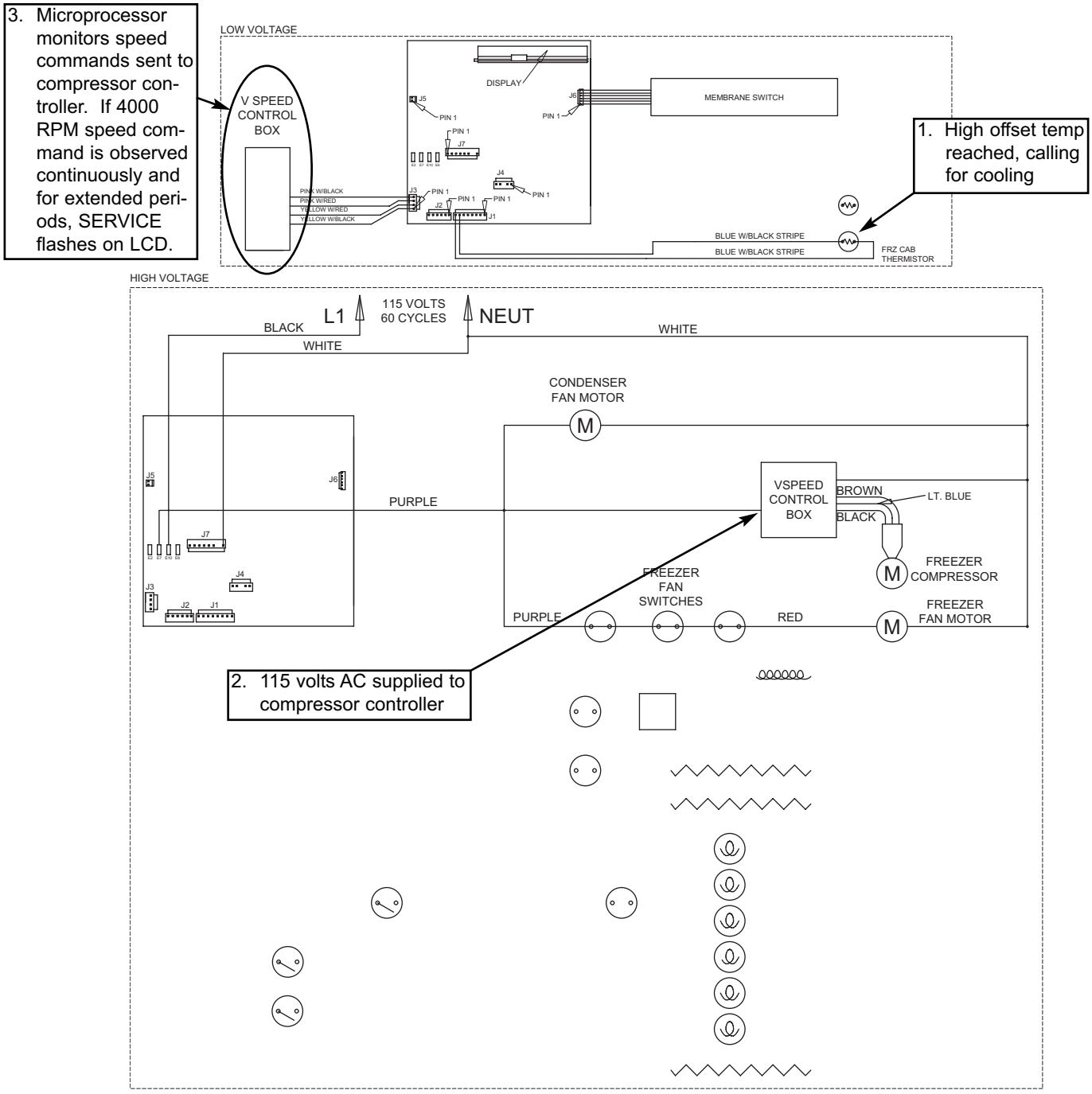


Figure 3-17. 700TF/I-2V Signal Trace Schematic of Compressor Electrical System

Monitor Icemaker System and Display If Service Is Needed

The microprocessor monitors the 115 volts supplied to the icemaker water valve solenoid. If the solenoid is energized for more than fifteen seconds, power to the icemaker system is disabled (this does not include the fill tube heater). A signal is then sent to the SERVICE and ICE annunciators on the LCD to flash. (See Figure 3-18 & 3-19)

NOTE: *To clear the SERVICE and ICE error annunciators, the problem must be corrected, then the unit must be switched OFF and back ON.*

NOTE: *To allow ice to freeze fully and reduce effects of low water pressure, the electronic control system interrupts power to the icemaker system for 45 minutes after each ice harvest. This feature is present in the tall units only.*

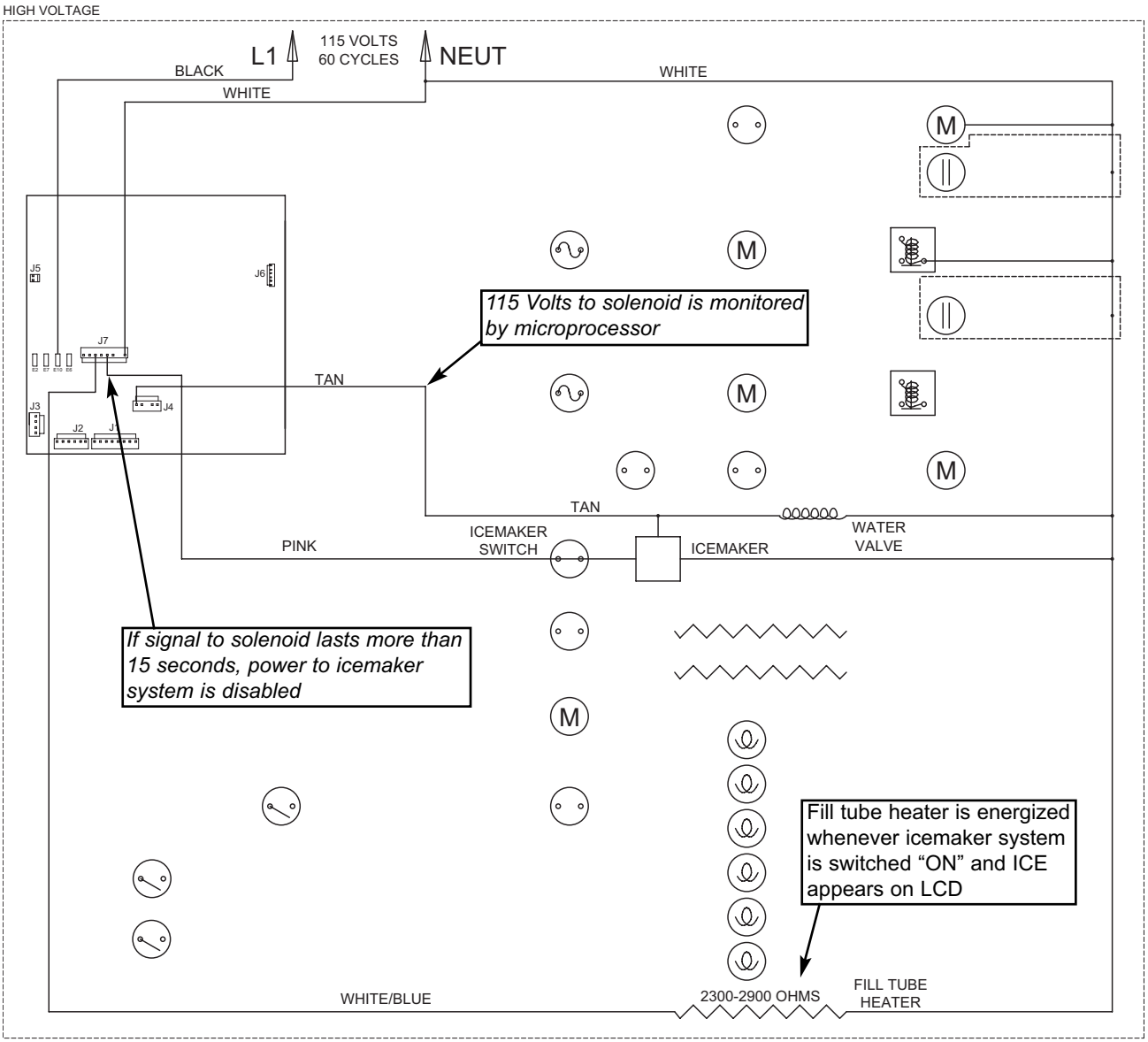


Figure 3-18. 700TC/I-2 Signal Trace Schematic (High Voltage) of Icemaker Electrical System

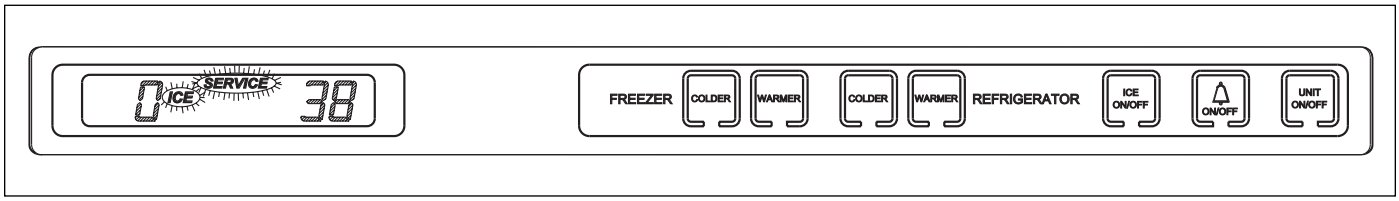


Figure 3-19. ICE & SERVICE Flashing if Icemaker Water Valve Solenoid Energized More Than 15 Seconds

UNIQUE 700- 2 TALL UNIT ELECTRONIC CONTROL INPUT OPERATIONS

The following few pages illustrate unique 700-2 tall unit electronic control input operations performed at the control panel that you would not expect a customer to perform every day. The input operations described are: Temperature Unit Selection Mode, Sabbath Mode, Showroom Mode, Manual Compartment Disable Mode, and Manual Freezer Evaporator Defrost.

Temperature Units Selection Mode *(Selecting Degrees Fahrenheit or Degrees Celsius Display)*

700-2 electronic controls are initially set to display temperature in Fahrenheit (°F) units of measure. However, the temperature units displayed can be converted from °F to °C (Celsius), and/or back again. This operation is called Temperature Units Selection.

NOTE: *Temperature Units Selection must be performed within the first minute after switching the unit ON.*

To convert the temperature units of measure from Fahrenheit (°F) readings to Celsius (°C) readings, press and hold the door ajar alarm bell key and the UNIT ON/OFF key simultaneously for five seconds, then release both keys (See Figure 3-20). Then, " **°C** " will appear on the LCD indicating that temperatures will now be displayed in Celsius units of measure. To convert back to Fahrenheit units of measure, repeat pressing the door ajar alarm bell key and the UNIT ON/OFF key simultaneously (See Figure 3-21).

NOTE: *Temperature Units Selection Mode will end ten seconds after the last key stroke.*

NOTE: *Do <u>not</u> press and hold the UNIT ON/OFF key first, this will simply switch the unit OFF.*

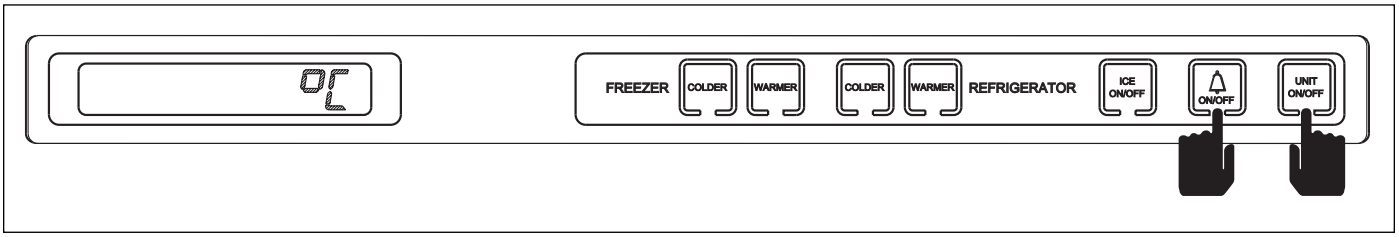


Figure 3-20. Converting to Celsius Units of Measure *(within first minute after switching unit ON)*
Press and Hold the Door Ajar Alarm Bell Key and The UNIT ON/OFF Keys for Five Seconds

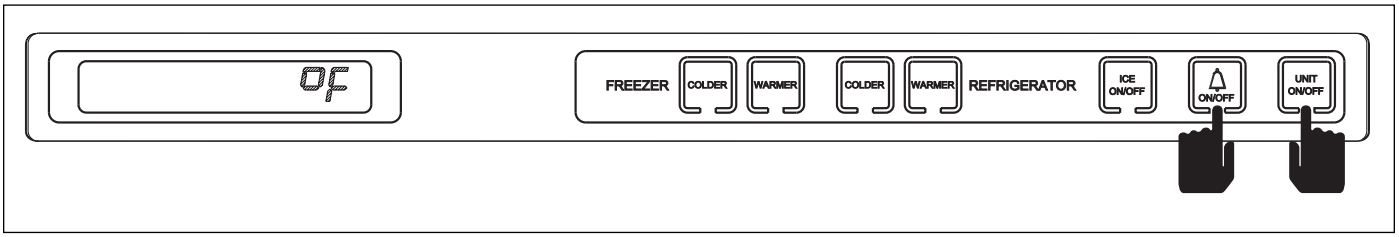


Figure 3-21. Converting Back to Fahrenheit Units of Measure
(within ten seconds of previous key stroke and/or within first minute after switching unit ON)
Press and Hold the Door Ajar Alarm Bell Key and The UNIT ON/OFF Keys

Sabbath Mode

Sabbath Mode was incorporated into the 700-2 electronic control system for the observance of certain religious days. Initiating Sabbath Mode disables the light switches and the circuits to the ice making system. The door ajar alarm is also disabled when the unit is in Sabbath Mode.

To initiate Sabbath Mode, the unit must first be switched OFF using the UNIT ON/OFF key (See Figure 3-22). With the unit switched OFF, press and hold the UNIT ON/OFF key for <u>ten</u> seconds, then release (See Figure 3-23).

To return to normal lighting operation, press and release the UNIT ON/OFF key.

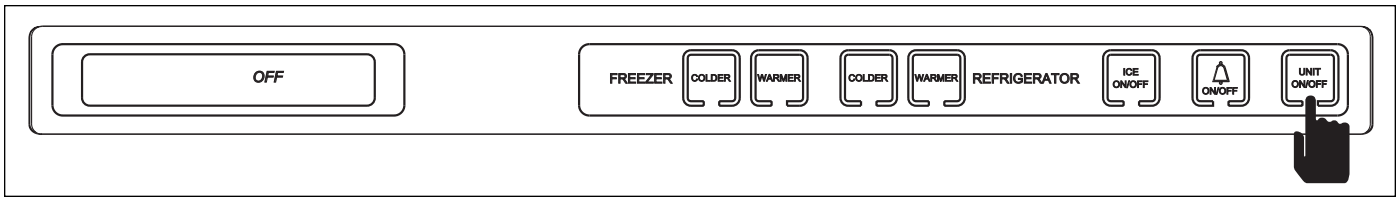


Figure 3-22. To Enter Sabbath Mode, Switch Unit OFF First

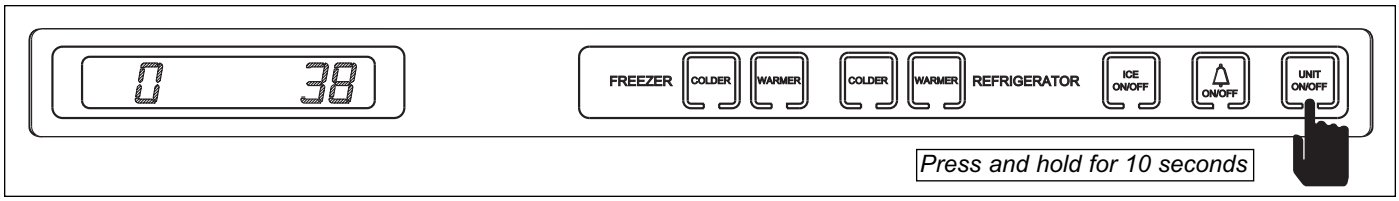


Figure 3-23. After Unit is Switched OFF, Press and Hold the UNIT ON/OFF Key for Ten Seconds

Showroom Mode

Showroom Mode was incorporated into the 700-2 electronic control system so that Integrated 700-2 Series units could be displayed in a showroom setting. When in Showroom Mode, all cooling functions are disabled, but the lighting system remains active.

To initiate Showroom Mode, the unit must first be switched OFF using the UNIT ON/OFF key. (See Figure 3-24) With the unit switched OFF, press and hold either pair of WARMER and COLDER keys, then press the UNIT ON/OFF key, then release all three keys. (See Figure 3-25)

To return unit to normal operating condition, repeat the steps of switching the unit OFF first. Then, press and hold the WARMER and COLDER keys, then press the UNIT ON/OFF key.

NOTE: *Always recheck set-points after returning unit to normal operating condition.*

NOTE: *It is possible to determine if a unit is in Showroom Mode by initiating Diagnostic Mode. If "Sr" is observed in the left temperature display area during Diagnostic Mode, the unit is in Showroom mode. Initiating Diagnostic Mode is covered later in this section.*

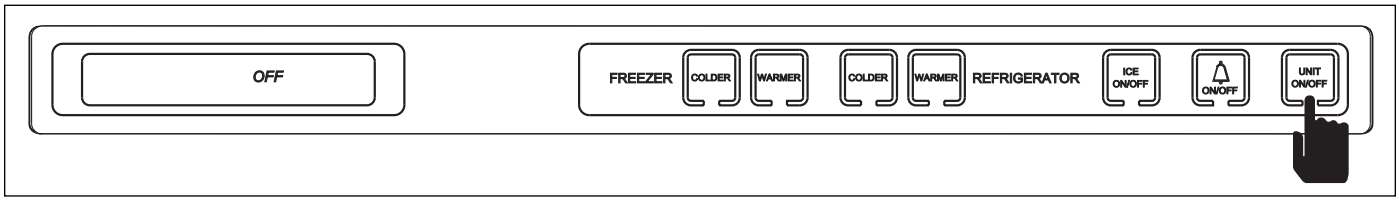


Figure 3-24. To Enter (or Exit) Showroom Mode, Switch Unit OFF First

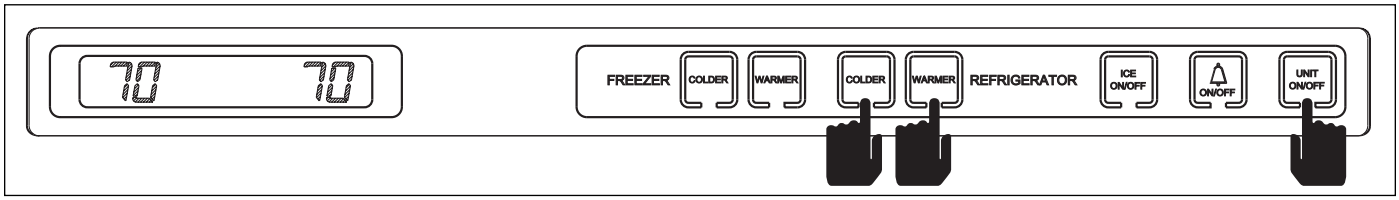


Figure 3-25. After Unit is Switched OFF, Press and Hold the WARMER and COLDER Keys, Then Press the UNIT ON/OFF Key

Manual Compartment Disable Mode

The Manual Compartment Disable Mode allows a customer to switch one compartment off for interior cleaning purposes, while allowing the other compartment to continue cooling. A service technician may also find this feature helpful for service purposes.

To initiate Manual Compartment Disable Mode, the unit must first be switched OFF using the UNIT ON/OFF key (See Figure 3-26). With the unit switched OFF, press and hold the WARMER key for the compartment being disabled, then press the UNIT ON/OFF key, then release both keys (See Figure 3-27). The LCD will display "- -" (double dashes) in place of temperature readings for the compartment chosen, indicating that all cooling functions for that compartment are disabled.

To return unit to normal operating condition, repeat the steps of switching the unit OFF first. Then, press and hold the WARMER key for the disabled compartment, then press the UNIT ON/OFF key.

NOTE: *Always recheck set-points after returning unit to normal operating condition.*

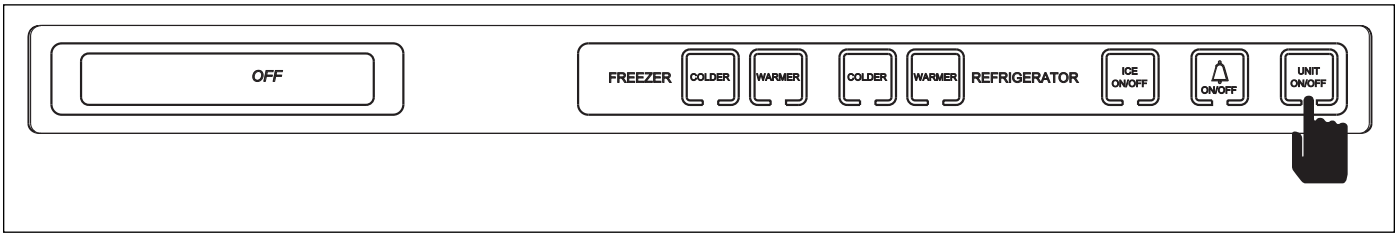


Figure 3-26. To Enter (or Exit) Manual Compartment Disable Mode, Switch Unit OFF First

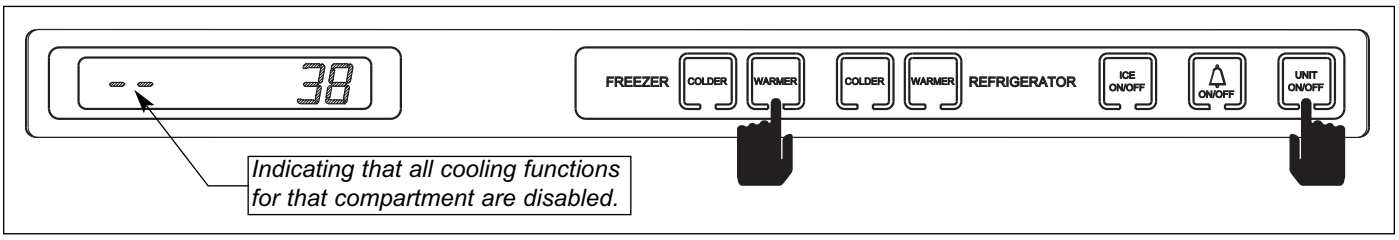


Figure 3-27. After Unit is Switched OFF, Press and Hold the WARMER Key for the Compartment Being Disabled, Then Press the UNIT ON/OFF Key.

Manual Freezer Evaporator Defrost

Manual Freezer Evaporator Defrost was incorporated into the Integrated 700-2 Series electronic control to assist in servicing and problem diagnostics.

To manually initiate freezer evaporator defrost, press and hold the ICE key at the control panel for five seconds, then release the key. (See Figure 3-28).

NOTE: *Manual Freezer Evaporator Defrost will not operate if unit is in Sabbath Mode.*

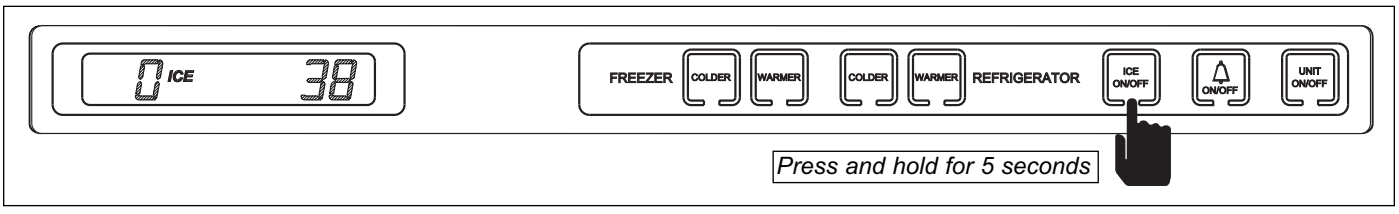


Figure 3-28. Initiate Manual Freezer Evaporator Defrost - Press and Hold the ICE key for Five Seconds

POSSIBLE 700-2 TALL UNIT ERROR INDICATORS

The next few pages contain diagrams illustrating what a customer may see on the LCD if there is a problem/error with the unit. Please note the serial number breaks listed under some diagrams.

- For Model 700TC/I-2, See Figures 3-29 through 3-33
- For Model 700TR-2, See Figures 3-34 through 3-37
- For Model 700TF/I-2 and Model 700TF/I-2V, See Figures 3-38 through 3-41

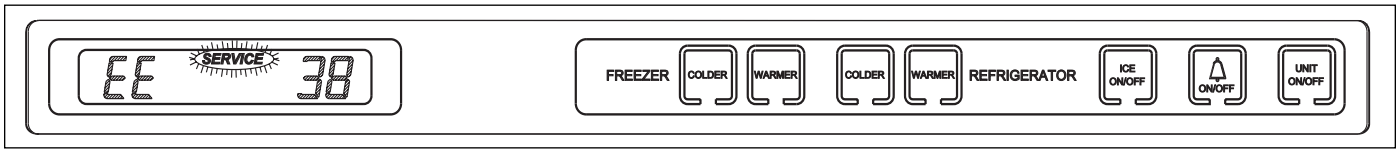


Figure 3-29. Model 700TC/I-2
"EE" Displayed at Left and "SERVICE" Flashing = Freezer Compartment Thermistor (or its Wiring) Fault

NOTE: *To clear this error indicator the problem must be corrected*

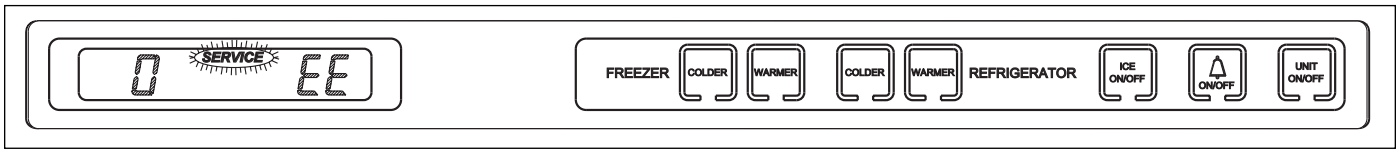


Figure 3-30. Model 700TC/I-2
"EE" Displayed at Right and "SERVICE" Flashing = Refrig. Compartment Thermistor (or its Wiring) Fault

NOTE: *To clear this error indicator the problem must be corrected*

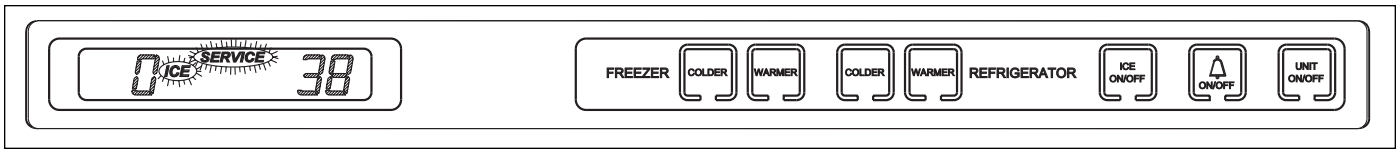


Figure 3-31. Model 700TC/I-2
"ICE" & "SERVICE" Flashing = Water Valve Solenoid energized 15 Seconds, Icemaker System Disabled

NOTE: *To clear this error indicator the problem must be corrected, then the unit switched OFF and back ON.*

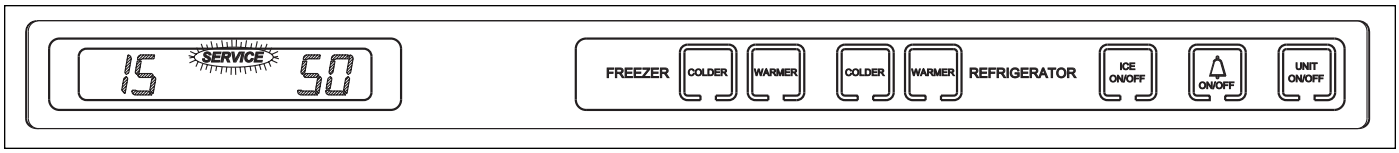


Figure 3-32. Model 700TC/I-2
"SERVICE" Alone Flashing = Excessive Compressor Run (OR) Refrig. Evap. Thermistor (or its Wiring) Fault

NOTE: *To help identify the problem, Diagnostic Mode (Covered later in this section) should be initiated.*

NOTE: *To clear this error indicator the problem must be corrected, then the unit switched OFF and back ON.*

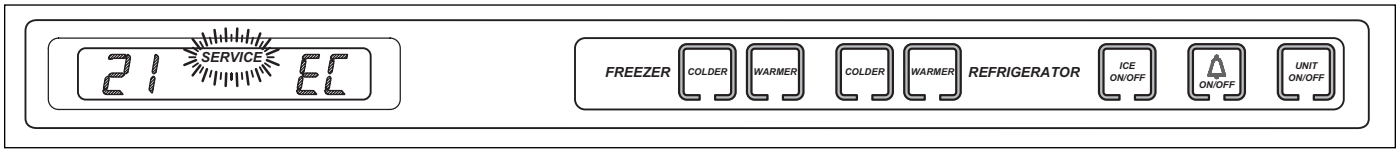


Figure 3-33. Model 700TC/I-2 *(AFTER SERIAL #1759493)*
"EC" at Right and "SERVICE" Flashing = Excessive Compressor Run with Error Codes Registered

NOTE: *To clear this error indicator and error code, the problem must be corrected, then the alarm bell ON/OFF key must be pressed and held for 15 seconds.*

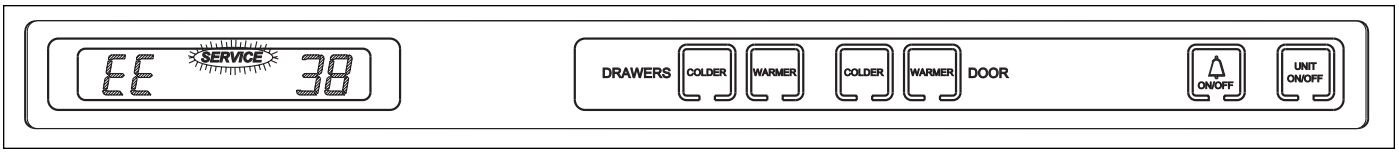


Figure 3-34. Model 700TR-2
"EE" Displayed at Left and "SERVICE" Flashing = Lower Compartment Thermistor (or its Wiring) Fault

NOTE: *To clear this error indicator the problem must be corrected*

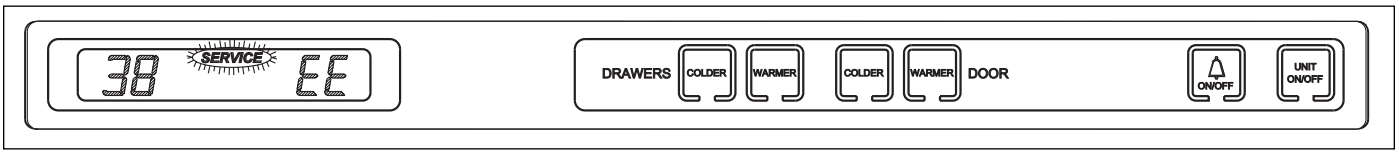


Figure 3-35. Model 700TR-2
"EE" Displayed at Right and "SERVICE" Flashing = Upper Compartment Thermistor (or its Wiring) Fault

NOTE: *To clear this error indicator the problem must be corrected*

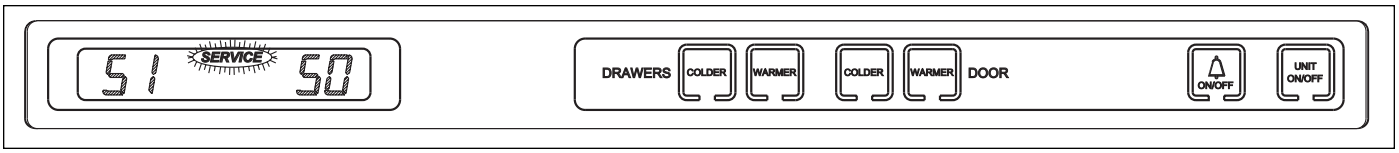


Figure 3-36. Model 700TR-2
"SERVICE" Alone Flashing = Excessive Compressor Run (OR)
Upper or Lower Evap. Thermistor (or its Wiring) Fault

NOTE: *To help identify the problem, Diagnostic Mode (Covered later in this section) should be initiated.*

NOTE: *To clear this error indicator the problem must be corrected, then the unit switched OFF and back ON.*

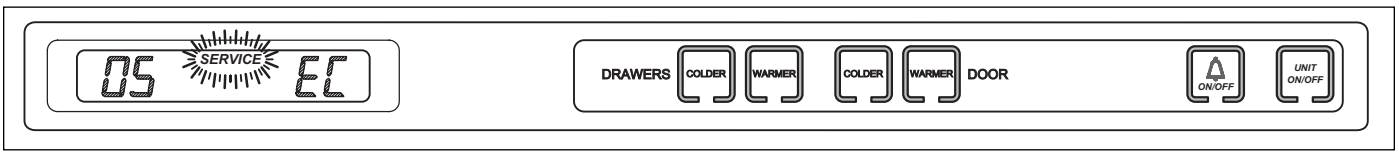


Figure 3-37. Model 700TR-2 ***(AFTER SERIAL #1759163)***
"EC" at Right and "SERVICE" Flashing = Excessive Compressor Run with Error Codes Registered

NOTE: *To clear this error indicator and error code, the problem must be corrected, then the alarm bell ON/OFF key must be pressed and held for 15 seconds.*

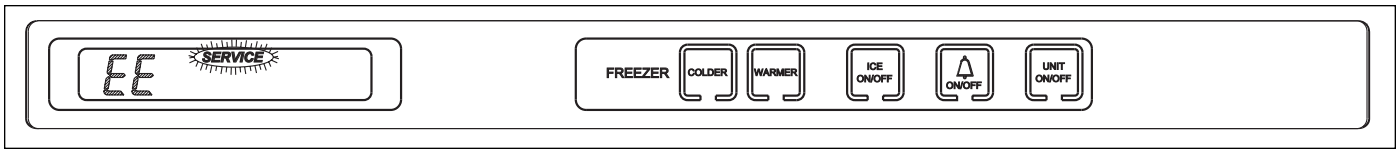


Figure 3-38. Model 700TF/I-2 & 700TF/I-2V
"EE" Displayed and "SERVICE" Flashing = Compartment Thermistor (or its Wiring) Fault

NOTE: *To clear this error indicator the problem must be corrected*

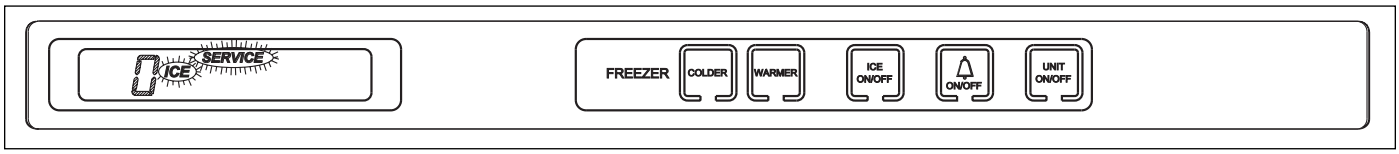


Figure 3-39. Model 700TF/I-2 & 700TF/I-2V
"ICE" & "SERVICE" Flashing = Water Valve Solenoid energized 15 Seconds, Icemaker System Disabled

NOTE: *To clear this error indicator the problem must be corrected, then the unit switched OFF and back ON.*

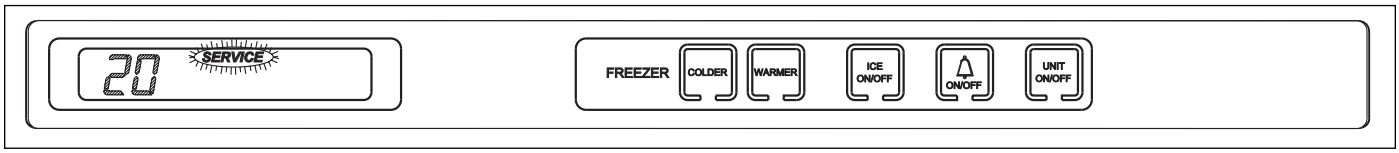


Figure 3-40. Model 700TF/I-2 & 700TF/I-2V
(700TF/I-2) "SERVICE" Alone Flashing = Excessive Compressor Run
(700TF/I-2V) "SERVICE" Alone Flashing = Excessive High-Speed Commands to Variable Speed Compressor

NOTE: *To clear this error indicator the problem must be corrected, then the unit switched OFF and back ON.*

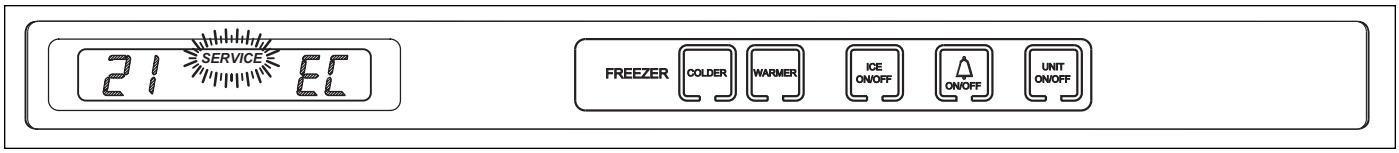


Figure 3-41. Model 700TF/I-2 & 700TF/I-2V *(AFTER SERIAL #1757258)*
(700TF/I-2) "EC" at Right & "SERVICE" Flashing = Excessive Compressor Run with Error Codes
(700TF/I-2V) "EC" at Right & "SERVICE" Flashing = Excessive High-Speed Commands to Variable Speed Compressor with Error Codes

NOTE: *To clear this error indicator and error code, the problem must be corrected, then the alarm bell ON/OFF key must be pressed and held for 15 seconds.*

700-2 TALL UNIT ELECTRONIC CONTROL TROUBLESHOOTING INPUT OPERATIONS

The following few pages explain troubleshooting input operations performed at the 700-2 tall unit control panel. The input operations described are Diagnostic Mode, Manual Component Activation Mode and Temperature Log Recall.

Diagnostic Mode

Initiating Diagnostic Mode allows the Service Technician to observe real-time temperature readings from all thermistors without temperature averaging.

NOTE: *The models 700TF/I-2 & 700TF/I-2V have only one compartment thermistor and one evaporator thermistor.*

NOTE: *Since Diagnostic Mode varies only slightly between the different models, a diagram of the 700TC/I-2 control panel is used to illustrate Diagnostic Mode key strokes.*

To initiate Diagnostic Mode, the unit must be ON. With the unit ON, press and hold either COLDER key, then press the UNIT ON/OFF key, then release both keys (See Figure 3-42). The left display area will show the real-time temperature of the thermistor being read, the right display area will show the thermistor location code, and all annunciators will illuminate on the LCD indicating the unit is in Diagnostic Mode. Pressing either COLDER key while in Diagnostic Mode will toggle to the next thermistor location. (See Figure 3-43, 3-44, 3-45 below and thermistor location code tables on next page)

NOTE: *After serial #1759493 (700TC/I-2), #1759163 (700TR-2) and #1757258 (700TF/I-2 & 700TF/I-2V), it is also possible to toggle through the thermistor locations using the WARMER keys.*

NOTE: *After serial #1759493 (700TC/I-2), #1759163 (700TR-2) and #1757258 (700TF/I-2 & 700TF/I-2V), If the COLDER and UNIT ON/OFF keys are pressed and held for 10 seconds, Manual Component Activation Mode will be initiated (this is covered later in the section).*

NOTE: *Diagnostic Mode will end 20 seconds after the last key stroke.*

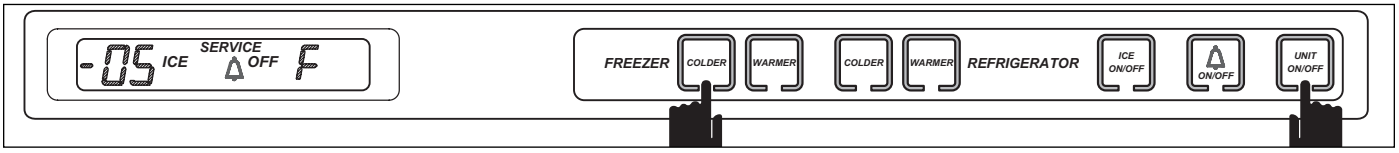


Figure 3-42. Initiate Diagnostic Mode - Press and Hold Either COLDER Key, Then the UNIT ON/OFF Key ("F" Indicates Freezer Compartment)

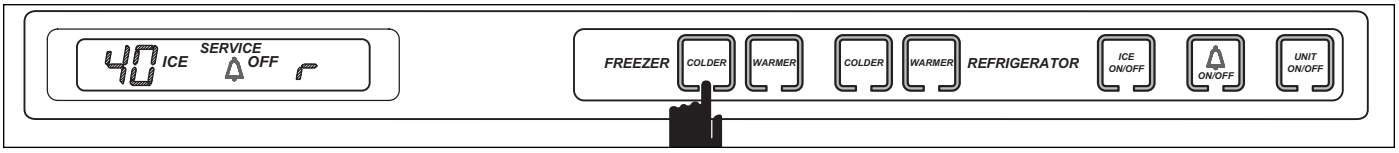


Figure 3-43. Toggle Through Temperature Readings - Press Either COLDER Key ("r" Indicates Refrigerator Compartment)

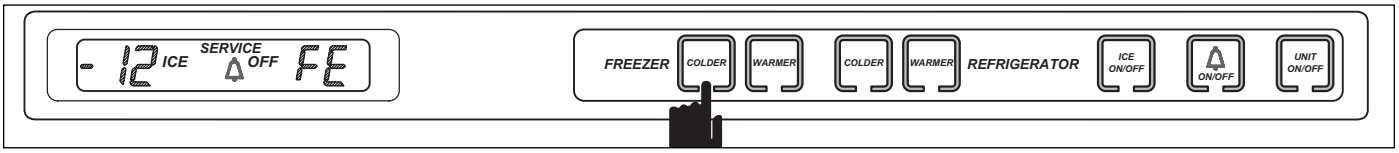


Figure 3-44. Toggle Through Temperature Readings - Press Either COLDER Key ("FE" Indicates Freezer Evaporator)

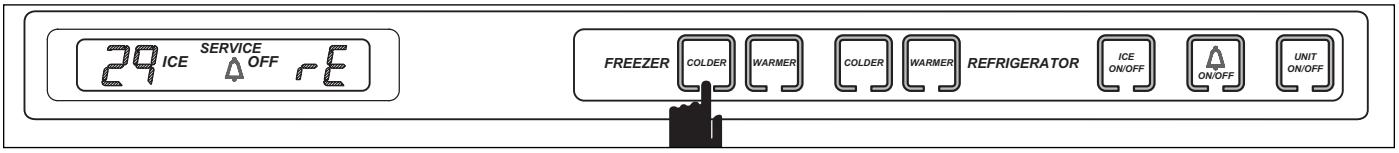


Figure 3-45. Toggle Through Temperature Readings - Press Either COLDER Key ("rE" Indicates Refrigerator Evaporator)

700TC/I-2	
THERMISTOR LOCATION	**CODE**
Freezer Compartment	***F***
Refrigerator Compartment	***r***
Freezer Evaporator	***FE***
Refrigerator Evaporator	***rE***

700TR-2	
THERMISTOR LOCATION	**CODE**
Lower Compartment	***L***
Upper Compartment	***U***
Lower Evaporator	***LE***
Upper Evaporator	***UE***

700TF/I-2	
THERMISTOR LOCATION	**CODE**
Freezer Compartment	***F***
Freezer Evaporator	***FE***

700TF/I-2V	
THERMISTOR LOCATION	**CODE**
Compressor Speed	***SP***
Freezer Compartment	***F***
Freezer Evaporator	***FE***

If “EE” is observed in left display area during Diagnostic Mode, the thermistor in that location is open or shorted, or there is a break in that thermistor’s wiring (See Figure 3-46).

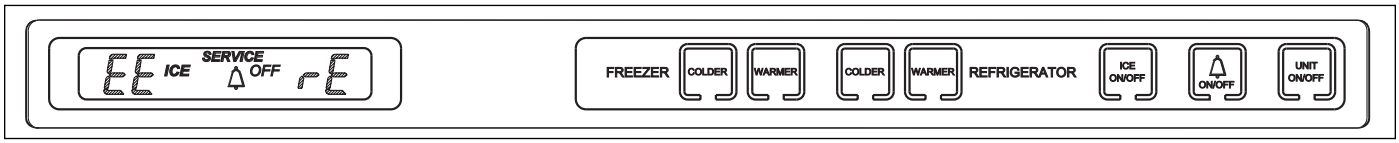


Figure 3-46. “EE” Observed in Diagnostic Mode = Thermistor Fault in Location Indicated by Code

If “Sr” is observed at left display area during Diagnostic Mode, the unit is in Showroom Mode, which was explained earlier in this section (See Figure 3-47).

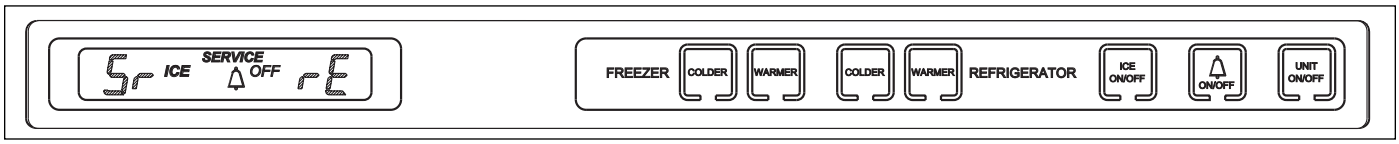


Figure 3-47. “Sr” Observed While in Diagnostic Mode = Unit is in Showroom Mode

If “SP” is observed in right display area during Diagnostic Mode, this indicates the speed commands being sent from the microprocessor to the compressor controller. This will only appear in the model 700TF/I-2V. (See Figure 3-48).

NOTE: *Speed commands display as: “00” = 0 RPM, “16” = 1600 RPM, “17” = 1700 RPM, “18” = 1800 RPM, “21” = 2100 RPM, “22” = 2200 RPM, “24” = 2400 RPM and “27” = 2700 RPM, “36” = 3600 RPM and “40” = 4000 RPM*

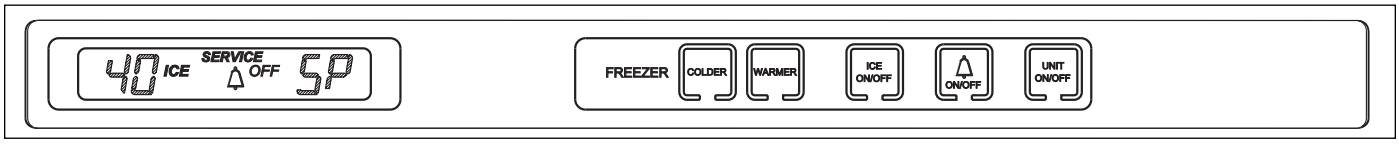


Figure 3-48. (700TF/I-2V Only) “SP” Observed While in Diagnostic Mode = Compressor Speed Command

After serial #1759493 (700TC/I-2), #1759163 (700TR-2) and #1757258 (700TF/I-2 & 700TF/I-2V), If “EC” is observed in the right display area during Diagnostic Mode, the numbers at left are “Error Codes” (See Figure 3-49 and the Error Code Table on next page). Error Codes indicate problems registered by specific components. If error codes are registered, they will appear before temperature readings and can be toggled through with the temperature readings as described on the previous page.

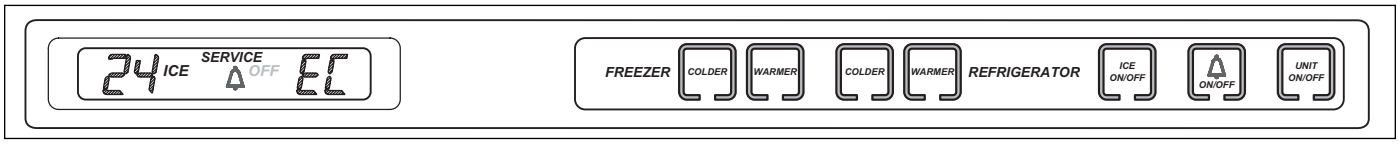


Figure 3-49. “EC” Observed While in Diagnostic Mode = Error Code (See Table on Following Page)

NOTE: *Error Codes were incorporated into the electronic control system after serial #1759493 (700TC/I-2), #1759163 (700TR-2) and #1757258 (700TF/I-2 & 700TF/I-2V). The Error Code table below only applies to units after these serial numbers.*

NOTE: *VS compressor = Variable Speed compressor*

NOTE: *Currently, Error Codes are registered because of thermistor errors, defrost system errors or* 700TF/I-2V variable speed compressor control system errors*. The table above will be updated through addendums when subsequent software and electrical changes occur and more error codes are added. See paragraph below for instructions on how to clear Error Codes.*

Error Code Table	
CODE	**INDICATION**
05	***Refrig. cabinet thermistor read open or shorted for 10+ seconds, or repeatedly read erratic temp's***
06	***Refrig. evaporator thermistor read open or shorted for 10+ seconds, or repeatedly read erratic temp's***
07	***Freezer cabinet thermistor read open or shorted for 10+ seconds, or repeatedly read erratic temp's***
08	***Freezer evaporator thermistor read open or shorted for 10+ seconds, or repeatedly read erratic temp's***
20	***Defrost under-heat with no voltage feedback through Gray/White wire at defrost start***
21	***Defrost overheat***
22	***No voltage feedback through Gray/White wire at defrost start***
23	***Defrost overheat with no voltage feedback through Gray/White wire at defrost start***
24	***Defrost under-heat***
80	***High VS compressor differential pressure or low voltage supplied to VS compressor***
81	***High amperage draw at VS compressor***
82	***VS compressor could not maintain lowest minimum speed at highest current draw***
83	***Locked VS compressor rotor***
84	***Short circuit at VS compressor controller output circuit***
85	***VS compressor converter overheated and shut down VS compressor***
86	***Serial communication failure between VS compressor controller and electronic control board***
87	***Speed information from electronic control board is out of specification***
88	***Electronic control board not receiving status data in response to speed commands***

If error codes are observed during Diagnostic Mode, a non-flashing SERVICE annunciator will appear on the LCD when Diagnostic Mode ends, indicating error codes are still registered (See Figure 3-50). To clear a non-flashing SERVICE annunciator and the error codes, the problem must be corrected and the unit must be ON. Then, the Bell ON/OFF key must be pressed and held for fifteen seconds. The control will emit a short "beep" when the SERVICE annunciator and error codes are cleared. (See Figure 3-51)

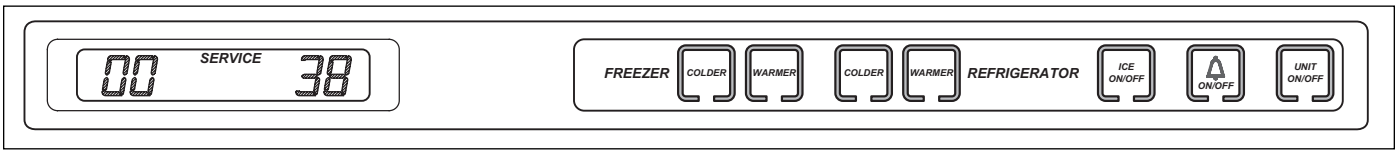


Figure 3-50. Non-flashing SERVICE Annunciator after Diagnostic Mode = Error Codes were Registered

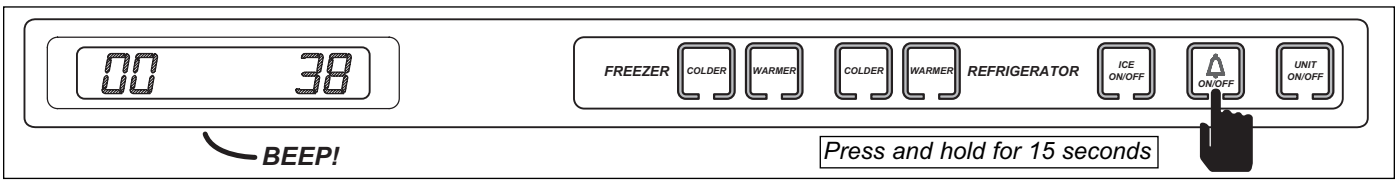


Figure 3-51. Clear Non-flashing SERVICE Annunciator - Press & Hold Bell ON/OFF Key for 15 Seconds

Manual Component Activation Mode

After serial #1759493 (700TC/I-2), #1759163 (700TR-2) and #1757258 (700TF/I-2 & 700TF/I-2V), a Manual Component Activation Mode was added to the electronic control system. Manual Component Activation Mode allows a Service Technician to energize a cooling system for five minutes. When activated, the chosen compartment's compressor and evaporator fan are energized along with the condenser fan. While in Component Activation Mode, the evaporator temperatures for that compartment are displayed on the LCD. This also allows the Service Technician to check for proper voltage readings at the activated components without having to wait for the compartment to call for cooling.

To initiate Manual Component Activation Mode, the unit must be ON. With the unit ON, press and hold the desired compartment COLDER key and the UNIT ON/OFF key for ten seconds (See Figure 3-52). The evaporator temperature for that compartment will be displayed in the left display area of the LCD and the right display area will show the thermistor location.

NOTE: *If the COLDER and UNIT ON/OFF keys are pressed and held for less then 10 seconds, Diagnostic Mode will be initiated. This was covered earlier in the section.*

NOTE: *It is possible to toggle through the the other temperature readings as in Diagnostic Mode, but in this case the temperature readings will last for five minutes rather than twenty seconds.*

NOTE: *The compressor overload could prevent the compressor from energizing.*

NOTE: *Manual Component Activation Mode will end five minutes after it is initiated. It is possible to end this five minute run time and return to normal operation by switching the unit OFF then back ON. If this is done, note that the electronic control will observe a three minute minimum compressor OFF time when the unit is switched back ON. This is to protect the compressor and its electricals.*

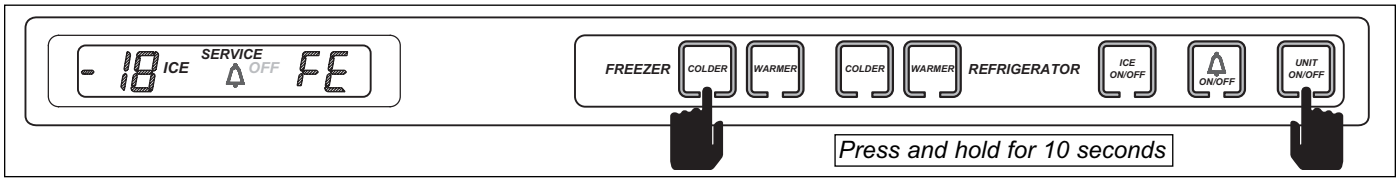


Figure 3-52. Initiate Manual Component Activation Mode - Press and Hold <u>Desired</u> COLDER Key and UNIT ON/OFF Key for 10 Seconds

Temperature Log Recall Mode

The electronic control system is equipped with a temperature history data storage system. This system logs/stores the average temperature of each individual thermistor every two hours (rounded to the nearest two degrees), along with any event indicators (explained later in this section), that may have occurred. These two-hour periods are referred to as *"indexes".* Up to 168 indexes can be stored for each compartment, making it possible to observe the preceding fourteen days of the unit's temperature history *(each index equals 2 hour temperature average; 2 hours X 168 indexes = 14 days).* After 168 indexes are stored, each new index will bump the oldest index. Index number "1" being the most recent two-hour temperature average and index number "168" being the oldest. Accessing this temperature history data so it can be viewed on the LCD is accomplished by initiating Temperature Log Recall Mode.

There are two ways to initiate Temperature Log Recall Mode. One allows viewing of compartment temperature history only (see below), the other allows viewing of compartment temperature history and evaporator temperature history (see following page).

NOTE: *Temperature Log Recall mode as described on the following page is only possible after serial #1759493 (700TC/I-2), #1759163 (700TR-2) and #1757258 (700TF/I-2 & 700TF/I-2V).*

Initiate Temperature Log Recall Mode To View Compartment Temperature History Only - Begin with the unit ON. Now, press and hold the desired compartment WARMER key, then press the UNIT ON/OFF key, then release both keys (See Figure 3-53). The left display area on the LCD will show average compartment thermistor temperature and in the right display area will be the index number. The first index number will be "1", indicating the most recent two-hour temperature average. The right display area will also flash the thermistor location code at three second intervals (See Figure 3-54).

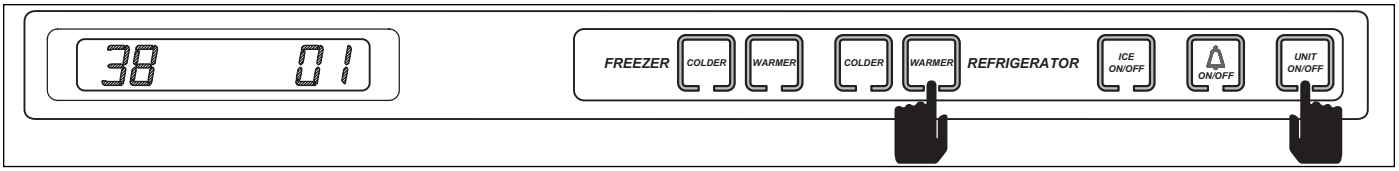


Figure 3-53. Initiate Temperature Log Recall Mode To View Compartment Temperature History Only - Press and Hold Desired WARMER Key, Then Press UNIT ON/OFF Key

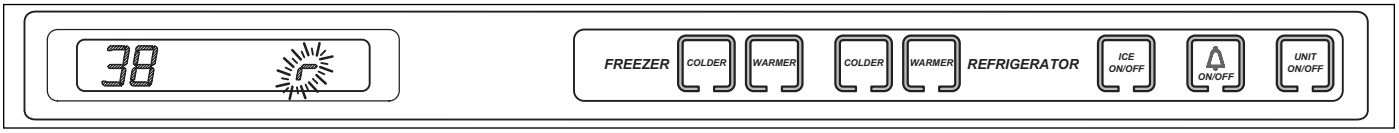


Figure 3-54. Thermistor Location Code Flashes Every Three Seconds

To toggle up through the indexes (from 1 to 168), press the same WARMER key in multiple key strokes (See Figure 3-55). To toggle down through the indexes (from 168 to 1), press the corresponding COLDER key in multiple key strokes (See Figure 3-56).

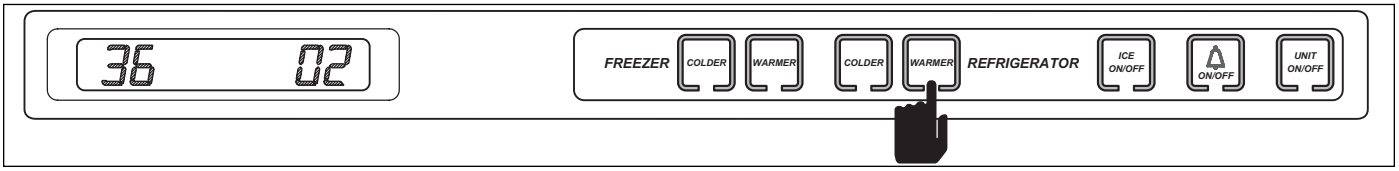


Figure 3-55. Toggle Up Through Indexes - Press WARMER Key in Consecutive Key Strokes

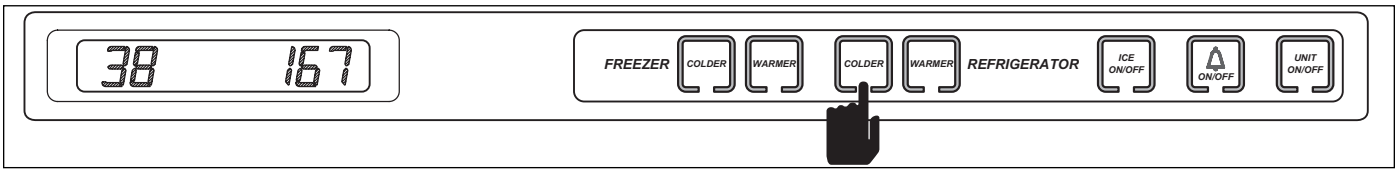


Figure 3-56. Toggle Down Through Indexes - Press COLDER Key in Consecutive Key Strokes

Initiate Temperature Log Recall Mode To View Compartment and Evaporator Temperature History - After serial #1759493 (700TC/I-2), #1759163 (700TR-2) and #1757258 (700TF/I-2 & 700TF/I-2V) Temperature Log Recall Mode was expanded to include the average evaporator temperatures. To view evaporator temperatures as well as the compartment temperatures, begin with the unit ON and in Diagnostic Mode (See Figure 3-57). While in Diagnostic Mode, toggle through the readings until the desired thermistor temperature is displayed on the LCD (See Figure 3-58). Now, press the WARMER key for that compartment and the UNIT ON/OFF key simultaneously (See Figure 3-59). The left display area on the LCD will show average thermistor temperature and in the right display area will be the index number "1" indicating the most recent two-hour temperature average (See Figure 3-59). The right display area will also flash the thermistor location code at three second intervals (See Figure 3-60).

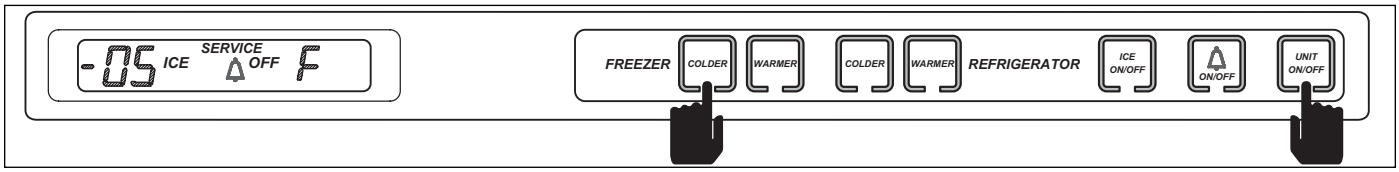


Figure 3-57. Initiate Diagnostic Mode - Press and Hold Either COLDER Key, then the UNIT ON/OFF Key

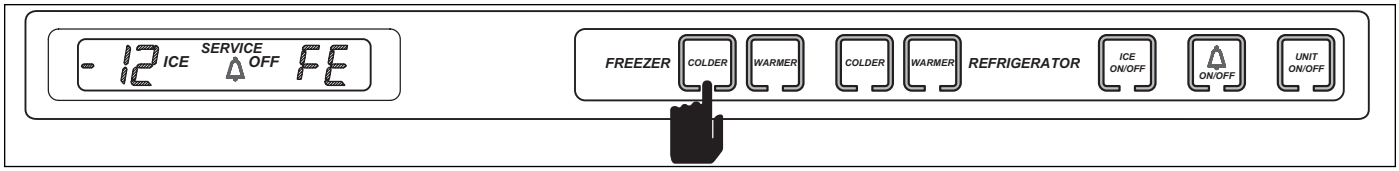


Figure 3-58. Toggle Through Temperature Readings - Press Either COLDER Key or Either WARMER Key Until Desired Thermistor Temperature is Displayed

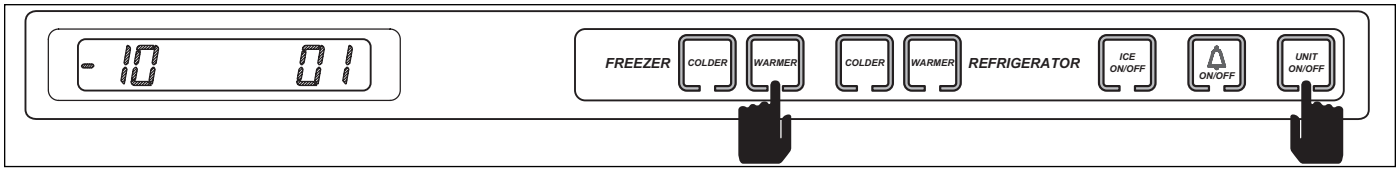


Figure 3-59. Initiate Temperature Log Recall Mode To View Temperature History - Press and Hold Desired WARMER Key and UNIT ON/OFF Key

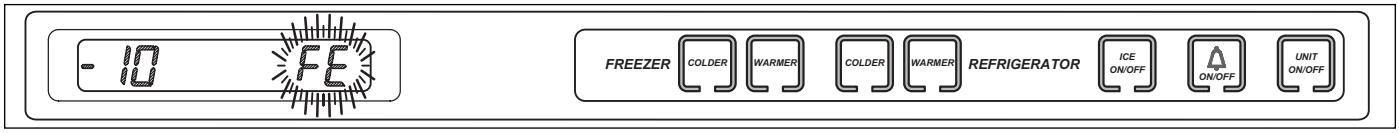


Figure 3-60. Thermistor Location Code Flashes Every Three Seconds

To toggle up through the indexes (from 1 to 168), press the same WARMER key in multiple key strokes (See Figure 3-61). To toggle down through the indexes (from 168 to 1), press the corresponding COLDER key in multiple key strokes (See Figure 3-62).

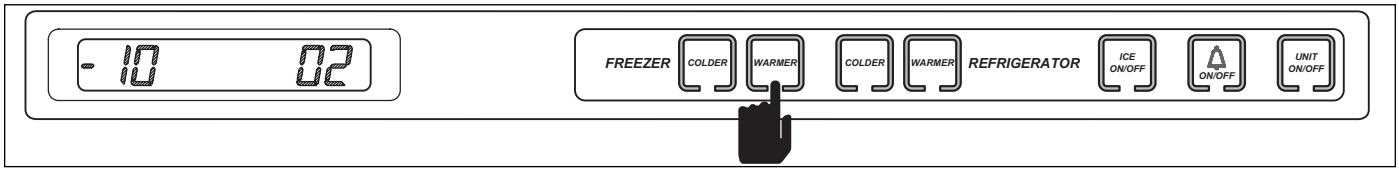


Figure 3-61. Toggle Up Through Indexes - Press WARMER Key in Consecutive Key Strokes

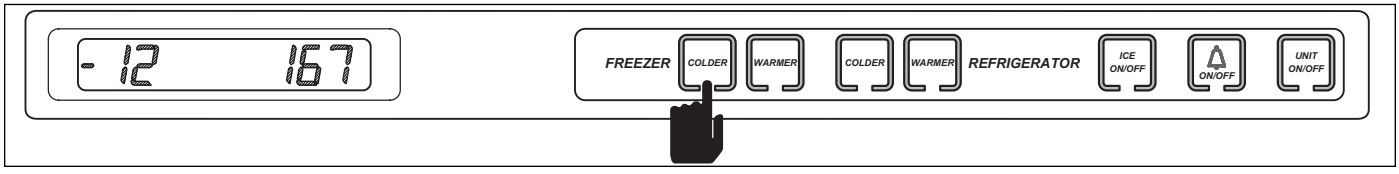


Figure 3-62. Toggle Down Through Indexes - Press COLDER Key in Consecutive Key Strokes

Possible Event Indicators During Temperature Log Recall Mode(s)

The diagrams below illustrate possible event indicators that may be observed while in Temperature Log Recall Mode. (See Figures 3-63 through 3-66)

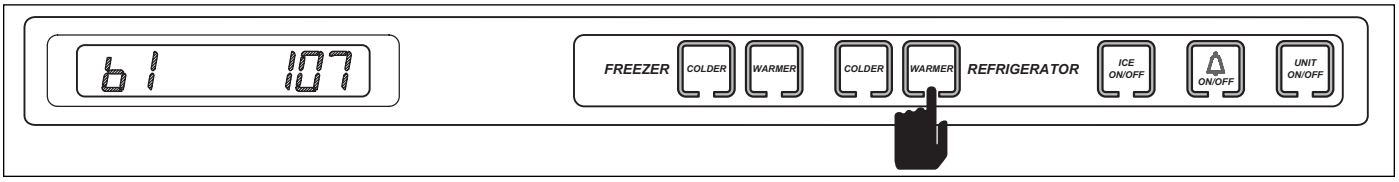


Figure 3-63. *"bl"* Indicates Index is "blank" - No Temperature has Been Logged Yet
(Only possible within first 14 days of unit operation, or after new control board is installed during service)

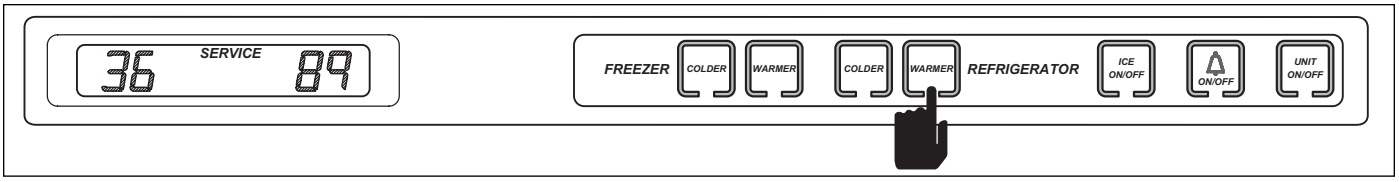


Figure 3-64. SERVICE Annunciator Illuminates - Indicates Unit was switched OFF During that Index Period by Pressing UNIT ON/OFF Key

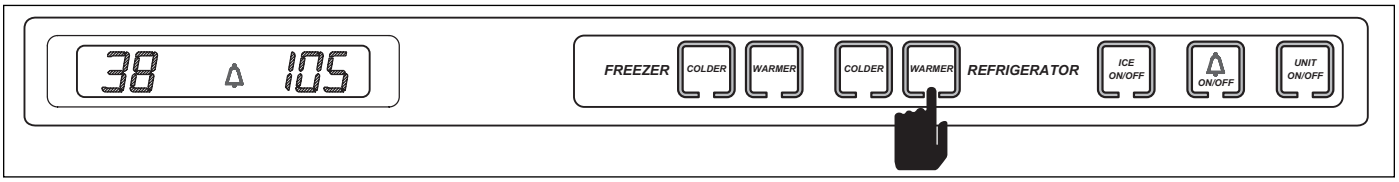


Figure 3-65. Bell Illuminates - Indicates Power Failure / Interruption During that Index Period

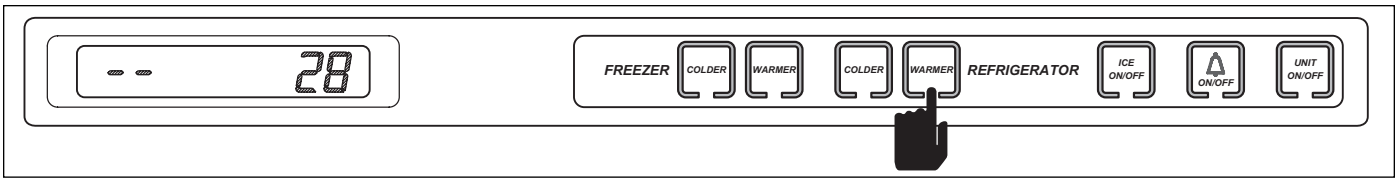


Figure 3-66. Double Dashes (- -) Displayed Instead of Temperature for Several Consecutive Index Periods - Indicates Bad EEPROM on Control Board. Board Must be Replaced

NOTE: *Double dashes will also be observed when in Manual Compartment Disable Mode. Only when double dashes are observed in Temperature Log Recall Mode for several consecutive indexes should the control board be replaced.*

NOTE: *If Manual Compartment Disable Mode has been activated during any of the 168 indexes, average temperatures will continue to be logged. No event indicator will appear with these temperatures.*

NOTE: *If the unit was in Showroom Mode during any of the 168 indexes, average temperatures will continue to be logged. No event indicator will appear with these temperatures.*

NOTE: *If the unit was switched OFF by pressing the UNIT ON/OFF key during any of the 168 indexes and there was still 115V AC supplied to the control board, the average temperatures will continue to be logged. This means temperatures would be expected to rise and the SERVICE annunciator would be present in all indexes in which the unit was OFF.*

NOTE: *Temperature Log Recall Mode will end 20 seconds after the last key stroke.*

Temperature Log Index Chart

NOTE : *The chart below applies to the hours in which the control has power. Temperature history data will only be stored when the control has 115V AC supplied to it. If power to the unit is interrupted, the average temperatures for that time period are stored with the event indicator. The temperature history data is stored in a non-volatile memory, so the data is not erased by a power failure, but actual time passage during the power failure will not be shown.*

TEMPERATURE LOG INDEX CHART

Index= Hours Past	Index= Hours Past	Index= Hours Past	Index= Hours Past
1 = 2 Hrs	43 = 86 Hrs	85 = 170 Hrs	127 = 254 Hrs
2 = 4 Hrs	44 = 88 Hrs	86 = 172 Hrs	128 = 256 Hrs
3 = 6 Hrs	45 = 90 Hrs	87 = 174 Hrs	129 = 258 Hrs
4 = 8Hrs	46 = 92 Hrs	88 = 176 Hrs	130 = 260 Hrs
5 = 10Hrs	47 = 94 Hrs	89 = 178 Hrs	131 = 262 Hrs
6 = 12 Hrs	48 = 96 Hrs *(4 Days)*	90 = 180 Hrs	132 = 264 Hrs *(11 Days)*
7 = 14 Hrs	49 = 98 Hrs	91 = 182 Hrs	133 = 266 Hrs
8 = 16 Hrs	50 = 100 Hrs	92 = 184 Hrs	134 = 268 Hrs
9 = 18 Hrs	51 = 102 Hrs	93 = 186 Hrs	135 = 270 hrs
10 = 20 Hrs	52 = 104 Hrs	94 = 188 Hrs	136 = 272 Hrs
11 = 22 Hrs	53 = 106 Hrs	95 = 190 Hrs	137 = 274 Hrs
12 = 24 Hrs *(1 Day)*	54 = 108 Hrs	96 = 192 Hrs *(8 Days)*	138 = 276 Hrs
13 = 26 Hrs	55 = 110 Hrs	97 = 194 Hrs	139 = 278 Hrs
14 = 28 Hrs	56 = 112 Hrs	98 = 196 Hrs	140 = 280 Hrs
15 = 30 Hrs	57 = 114 Hrs	99 = 198 Hrs	141 = 282 Hrs
16 = 32 Hrs	58 = 116 Hrs	100 = 200 Hrs	142 = 284 Hrs
17 = 34 Hrs	59 = 118 Hrs	101 = 202 Hrs	143 = 286 Hrs
18 = 36 Hrs	60 = 120 Hrs *(5 Days)*	102 = 204 Hrs	144 = 288 Hrs *(12 Days)*
19 = 38 Hrs	61 = 122 Hrs	103 = 206 Hrs	145 = 290 Hrs
20 = 40 Hrs	62 = 124 Hrs	104 = 208 Hrs	146 = 292 Hrs
21 = 42 Hrs	63 = 126 Hrs	105 = 210 Hrs	147 = 294 Hrs
22 = 44 Hrs	64 = 128 Hrs	106 = 202 Hrs	148 = 296 Hrs
23 = 46 Hrs	65 = 130 Hrs	107 = 214 Hrs	149 = 298 Hrs
24 = 48 Hrs *(2 Days)*	66 = 132 Hrs	108 = 216 Hrs *(9 Days)*	150 = 300 Hrs
25 = 50 Hrs	67 = 134 Hrs	109 = 218 Hrs	151 = 302 Hrs
26 = 52 Hrs	68 = 136 Hrs	110 = 220 Hrs	152 = 304 Hrs
27 = 54 Hrs	69 = 138 Hrs	111 = 222 Hrs	153 = 306 Hrs
28 = 56 Hrs	70 = 140 Hrs	112 = 224 Hrs	154 = 308 Hrs
29 = 58 Hrs	71 = 142 Hrs	113 = 226 Hrs	155 = 310 Hrs
30 = 60 Hrs	72 = 144 Hrs *(6 Days)*	114 = 228 Hrs	156 = 312 Hrs *(13 Days)*
31 = 62 Hrs	73 = 146 Hrs	115 = 230 Hrs	157 = 314 Hrs
32 = 64 Hrs	74 = 148 Hrs	116 = 232 Hrs	158 = 316 Hrs
33 = 66 Hrs	75 = 150 Hrs	117 = 234 Hrs	159 = 318 Hrs
34 = 68 Hrs	76 = 152 Hrs	118 = 236 Hrs	160 = 320 Hrs
35 = 70 Hrs	77 = 154 Hrs	119 = 238 hrs	161 = 322 Hrs
36 = 72 Hrs *(3 Days)*	78 = 156 Hrs	120 = 240 Hrs *(10 Days)*	162 = 324 Hrs
37 = 74 Hrs	79 = 158 Hrs	121 = 242 Hrs	163 = 326 hrs
38 = 76 Hrs	80 = 160 Hrs	122 = 244 Hrs	164 = 328 Hrs
39 = 78 Hrs	81 = 162 Hrs	123 = 246 Hrs	165 = 330 Hrs
40 = 80 Hrs	82 = 164 Hrs	124 = 248 Hrs	166 = 332 Hrs
41 = 82 Hrs	83 = 166 Hrs	125 = 250 Hrs	167 = 334 Hrs
42 = 84 Hrs	84 = 168 Hrs *(7 Days)*	126 = 252 Hrs	168 = 336 Hrs *(14 Days)*

BASIC 700- 2 BASE UNIT ELECTRONIC CONTROL SYSTEM

Input operations for the electronic control system are performed at the control panel (located inside the upper drawer), with monitoring, regulating and controlling functions taking place at the control board (located in the sump area). Temperatures and possible problems with the unit are displayed in the control panel on the LCD. This page illustrates a basic 700-2 base unit electronic control system. (See Figure 3-67) The entire electronic control system is described in greater detail on the following pages.

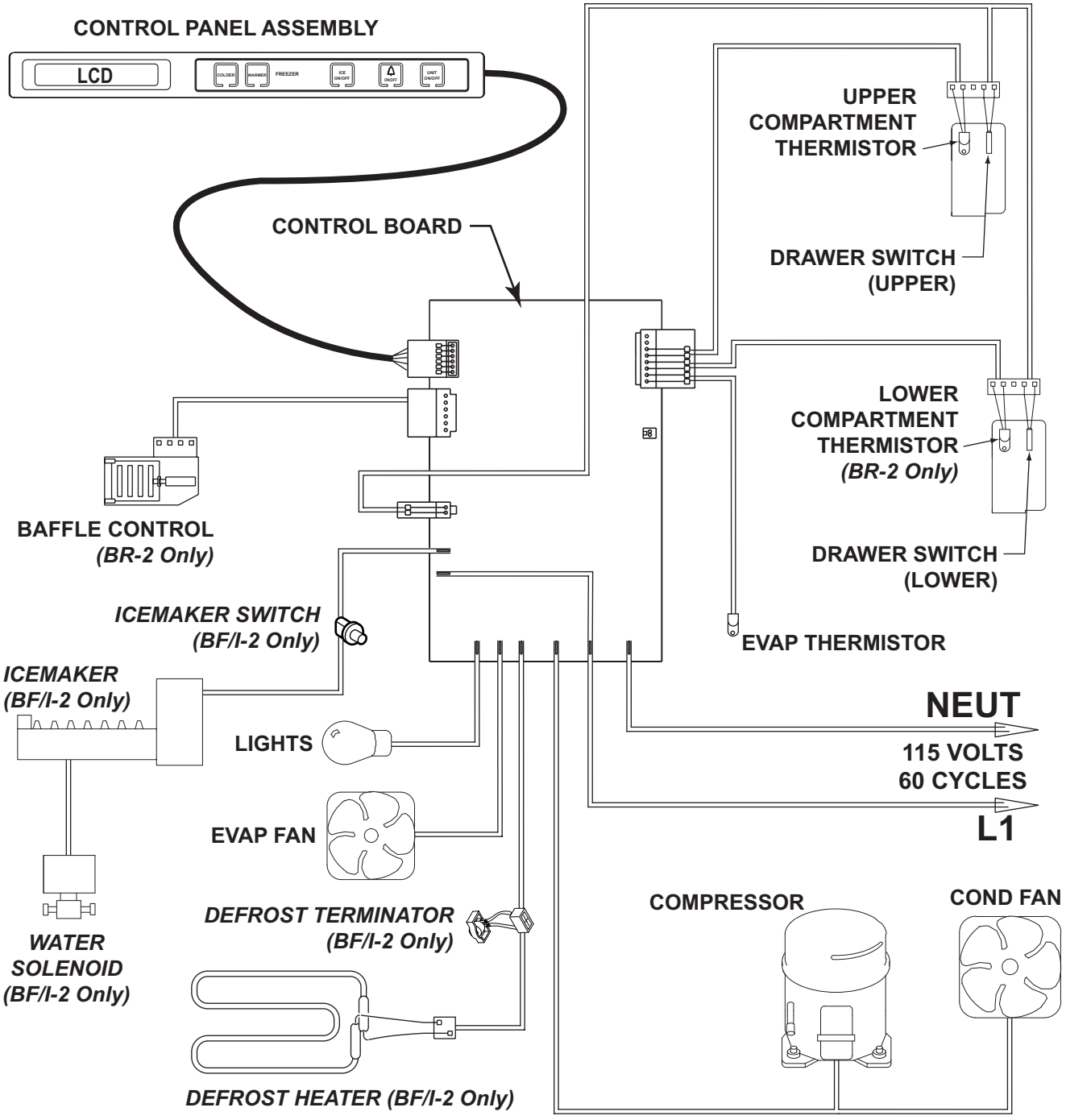


Figure 3-67. Basic 700-2 Base Unit Electronic Control System Diagram

700-2 BASE UNIT CONTROL BOARD LAYOUT AND SUMMARY TABLE

The electrical connection points on the 700-2 base unit control board are labeled alphanumerically. These labels correspond with the alphanumeric control board summary table, located on all 700 Series wiring diagrams. By referencing the summary table, it is possible to identify which components are connected at which points on the control board. Below is a layout diagram of the control board, and a copy of a summary table. (See Figures 3-68 & 3-69)

NOTE: *All components on the control board are non-replaceable. If a problem with the control board is identified, the complete control board must be replaced.*

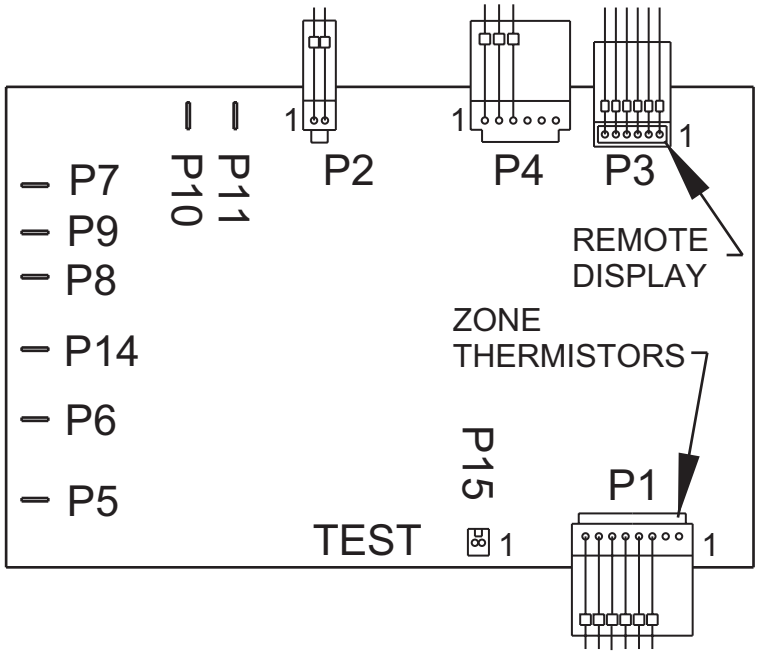


Figure 3-68. 700-2 Base Unit Control Board Layout

TERM.	DESCRIPTION	COLOR	ABBR.
P1	THERMISTORS	SEE AUX. CHART	-----
P2	LIGHT SWITCH	WHITE/RED	WH/RD
P3	REMOTE DISPLAY	SEE AUX. CHART	-----
P4	BAFFLES	------	-----
P5	L2-NEUTRAL 115	WHITE	WHITE
P6	L1-HOT 115	BLACK	BLACK
P7	LIGHTS-115V OUT	ORANGE	ORANG
P8	DEFROST HEATER	BLUE	BLUE
P9	EVAPORATOR FAN	RED	RED
P10	ICEMAKER SWITCH	PINK	PINK
P11	JUMPER	BLACK	BLACK
P12	------	------	-----
P13	------	------	-----
P14	COMPRESSOR	PURPLE	PURPLE
P15	MANUFACTURING TEST	------	TEST

TERM.	No#	COLOR
P1	1	EMPTY
	2	EMPTY
	3	BLUE W/RED
	4	BLUE W/RED
	5	LT. BLUE W/YELLOW
	6	LT. BLUE W/YELLOW
	7	BLUE W/BLACK
	8	BLUE W/BLACK
P3	1	BLACK
	2	WHITE
	3	RED
	4	YELLOW
	5	ORANGE
	6	BLUE

AUXILIARY CHART

Figure 3-69. 700-2 Base Unit Control Board Summary Table (700BF/I-2 Summary Table Shown)

700-2 BASE UNIT CONTROL PANEL LAYOUT

Please note that in the second part of this section the illustrations of the control panel will vary between the 700BR-2 and the 700BF/I-2, depending on the topic covered. (See Figure 3-70 & 3-71)

NOTE: *The LCD on the Integrated 700-2 Series base units is not back lit by unit lighting. It will appear darker than the LCD on Integrated 700-2 Series tall units.*

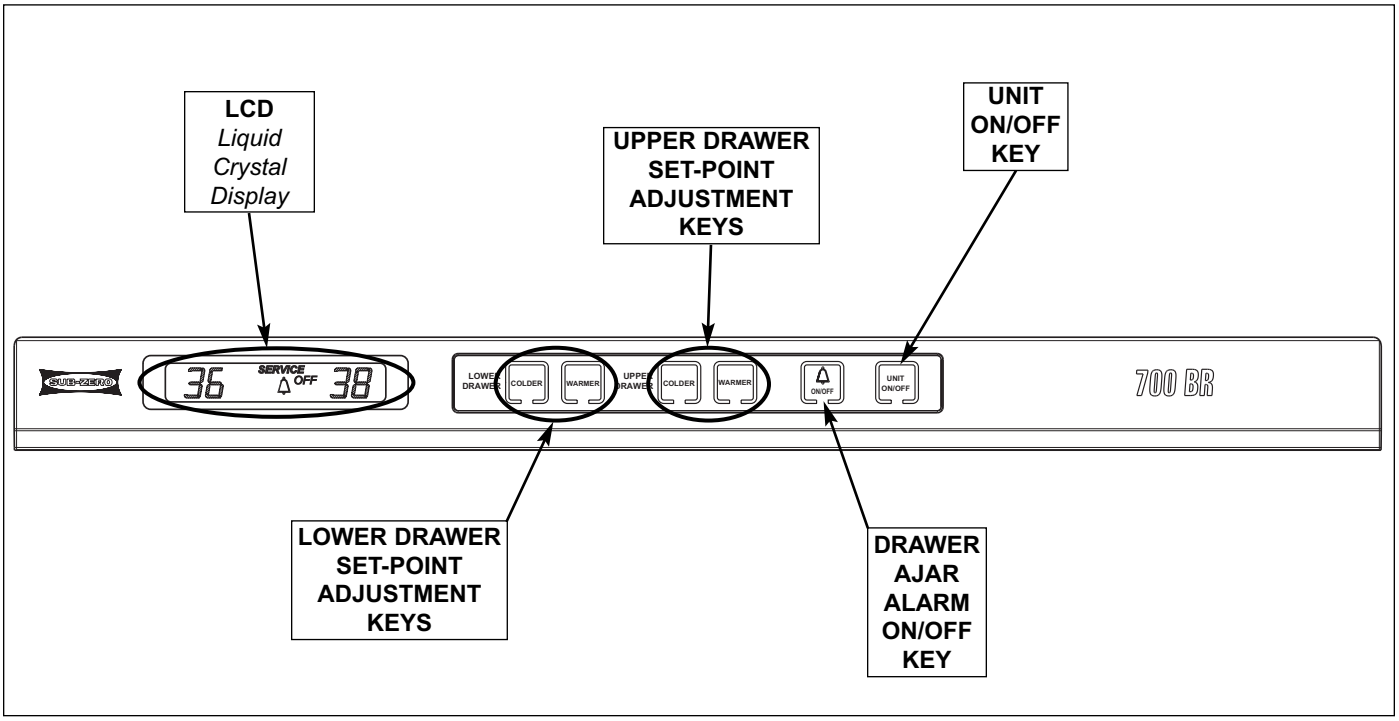


Figure 3-70. 700BR-2 Control Panel Layout

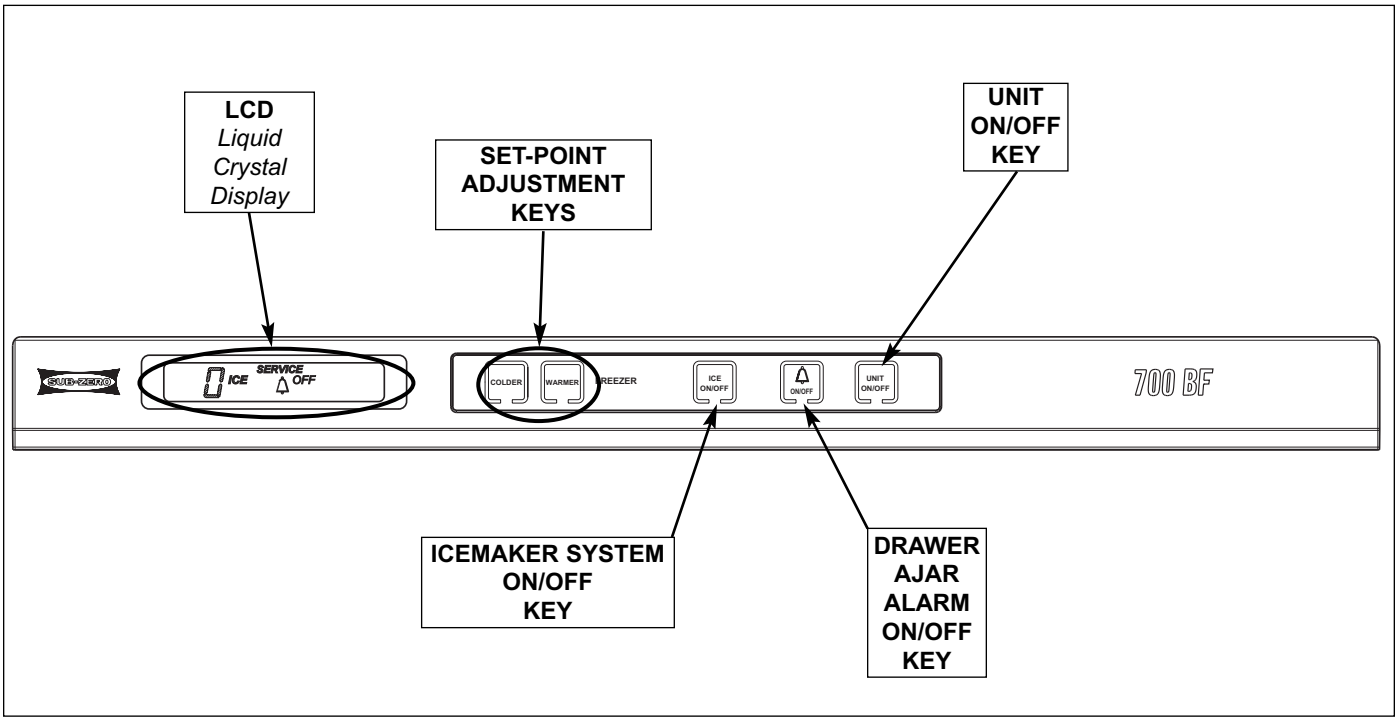


Figure 3-71. 700BF/I-2 Control Panel Layout

BASIC 700-2 BASE UNIT ELECTRONIC CONTROL INPUT OPERATIONS

The following illustrations show the basic input operations performed at the 700-2 base unit control panel. Switching the unit ON and OFF, adjusting the set-point (temperature adjustments), switching the ice maker system ON and OFF (700BFI-2 only), and enabling and disabling the door ajar alarm feature will be explained.

Unit ON/OFF

All units are shipped in the Off Mode and when power is supplied to the unit, a trace of the word “OFF” is visible on the LCD. By pressing and releasing the UNIT ON/OFF key (See Figure 3-72), power is allowed past the control board to the rest of the unit. This will be indicated by the unit lights illuminating and the LCD energizing.

NOTE: *Whenever the unit is switched off using the the UNIT ON/OFF key, a trace of the word “OFF” will be visible on the LCD as long as there is power to the unit.*

⚠ WARNING

WHEN IN OFF MODE, 115 VOLTS AC IS STILL PRESENT AT CONTROL BOARD.

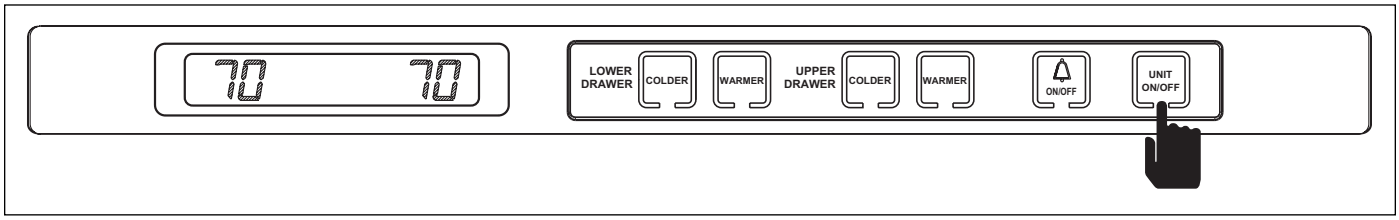


Figure 3-72. 700-2 Base Unit ON/OFF, Press UNIT ON/OFF Key

Adjusting Set-Point (Temperature Adjustments)

To adjust the set-points, press the appropriate compartment WARMER or COLDER key on the control panel in multiple key strokes until the desired set-point is achieved. One key stroke equals a one degree (Fahrenheit or Celsius) change. (See Figure 3-73)

NOTE: *Temperature ranges are -5°F (-21°C) to +5°F (-15°C) in freezer compartment, with an initial set-point of 0°F (-18°C), and +34°F (+1°C) to +45°F (+7°C) in refrigerator compartment, with an initial set-point of +38°F (+3°C).*

NOTE: *The initial key stroke of the WARMER or COLDER keys will change the previous set-point by one degree* (Fahrenheit or Celsius).

NOTE: *The set-point will be displayed on the LCD for 10 seconds after the last WARMER or COLDER key stroke. After the 10 second delay, the compartment temperature will be displayed. As the compartment temperature changes, the temperature displayed on the LCD will change by no more than one degree per minute.*

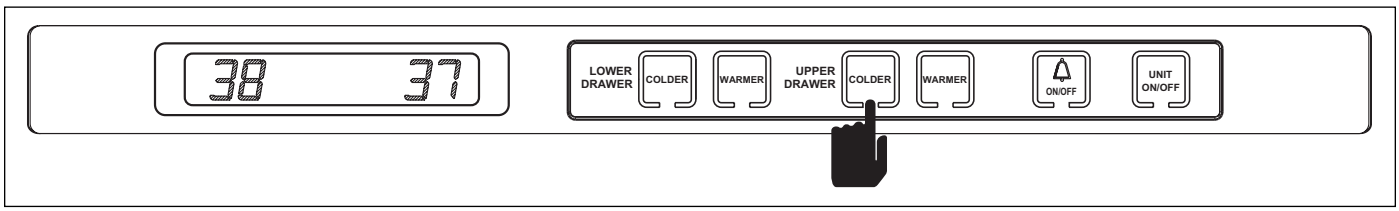


Figure 3-73. Adjusting the Set-Point - Press WARMER or COLDER Key In Multiple Key Strokes

Drawer Ajar Alarm ON/OFF

All Integrated 700-2 Series base units are equipped with a drawer ajar alarm feature. When activated the alarm will alert a customer if a drawer is stuck open or accidentally left open. To enable the drawer ajar alarm feature, press and release the drawer ajar alarm bell ON/OFF key on the control panel. A bell annunciator will appear on the LCD indicating that the alarm feature is active. (See Figure 3-74) Now, if a drawer is open for 30 seconds, the bell annunciator will blink and the audible alarm will beep. To disable the drawer ajar alarm, simply press the drawer ajar alarm bell ON/OFF key and the bell annunciator on the LCD will disappear, indicating the alarm feature is off.

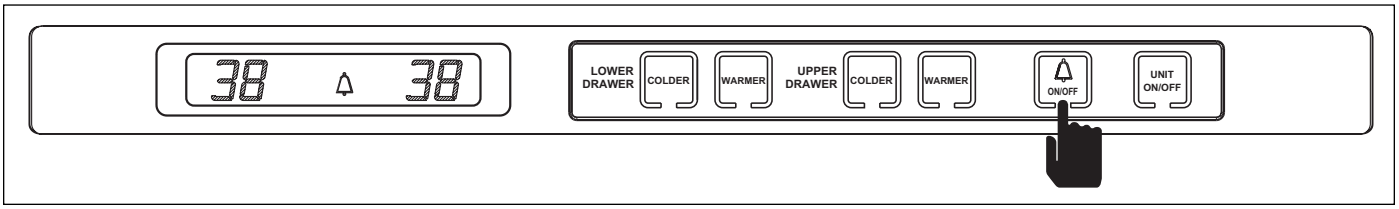


Figure 3-74. Drawer Ajar Alarm ON/OFF, Press Alarm Bell ON/OFF Key

Icemaker System ON/OFF (700BFI-2 Only)

All 700BFI-2 units are shipped with the icemaker system switched off. By pressing and releasing the ICE ON/OFF key on the control panel, power is allowed to the icemaker system, and "ICE" appears on the LCD (See Figure 3-75). To disable the icemaker system, press and release the ICE ON/OFF key again and "ICE" will disappear from the LCD indicating the icemaker system is off.

NOTE: *When the unit is in "Sabbath Mode," the icemaker system is de-energized. Sabbath Mode will be explained in UNIQUE ELECTRONIC CONTROL SYSTEM INPUT OPERATIONS.*

NOTE: *Unlike the 700-2 tall units, there is not a 45 minute dwell after an ice harvest in a 700BF/I-2 unit. The icemaker water valve is also not monitored by the control board.*

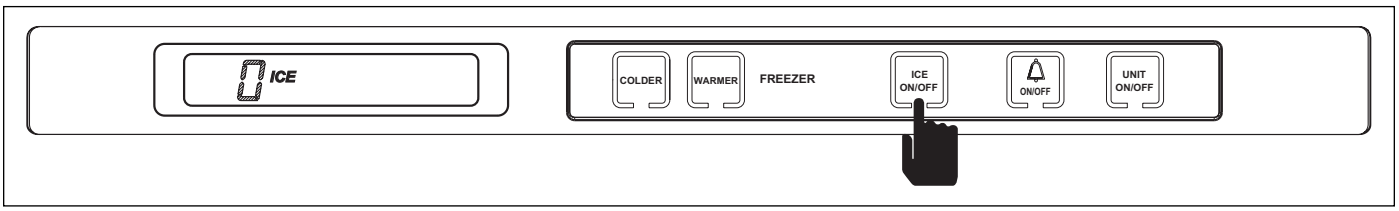


Figure 3-75. 700BFI-2 Icemaker System ON/OFF - Press ICE ON/OFF Key

FUNCTIONS OF 700 BASE UNIT ELECTRONIC CONTROL SYSTEM

The following few pages explain the monitoring, regulating and controlling functions of the electronic control system. Signal trace schematics illustrations are used to demonstrate current flow for the function being explained.

NOTE: *Only normal operating electronic control functions are described along with problems which could cause error annunciators. All possible malfunctions are addressed in the Troubleshooting Guide.*

Supply Power to the Lighting System

115 Volts are supplied to the lighting system through the control board when the unit is switched on by pressing the UNIT ON/OFF key and a drawer is opened (See Figure 3-76).

NOTE: *Disabling the lighting system (Sabbath Mode) is covered in UNIQUE ELECTRONIC CONTROL SYSTEM INPUT OPERATIONS.*

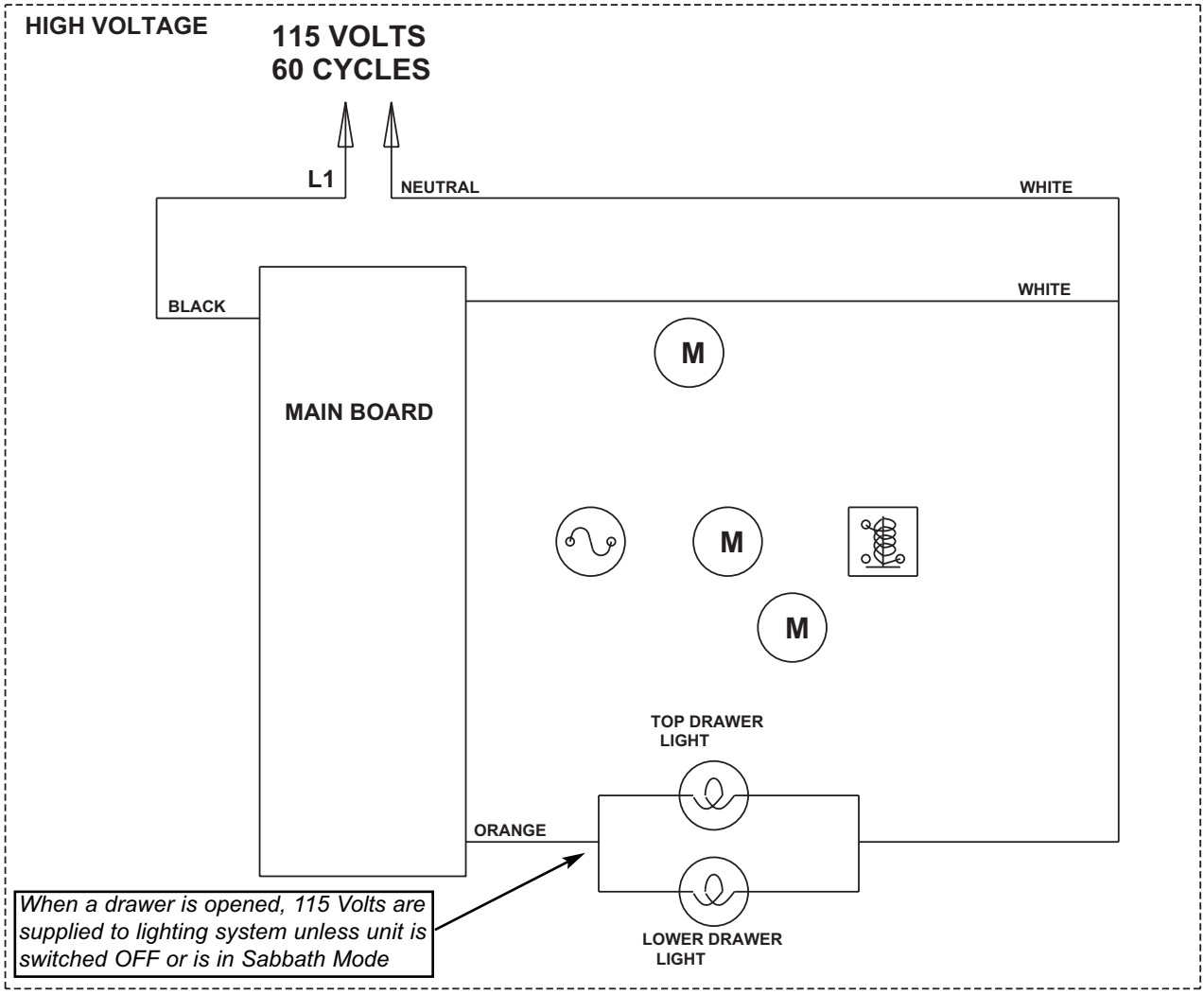


Figure 3-76. Signal Trace Schematic (High Voltage) of Lighting System

Monitor, Regulate and Display Two Separate Compartment Temperatures in the 700BR-2

By using an electronically controlled air baffle, it is possible to adjust the set-point in the lower drawer of a 700BR-2 a maximum of three degrees colder than the upper drawer.

Power to the compressor and condenser fan in a 700BR-2 is controlled by the thermistor located inside the upper reed switch. When the upper drawer compartment temperature reaches high offset, the control board energizes the evaporator fan, compressor and condenser fan. (See Figure 3-77) When the low offset temperature is achieved in the upper drawer, the control board de-energizes the evaporator fan, compressor and condenser fan.

If the lower drawer compartment temperature (sensed by the thermistor in the lower reed switch) is at high offset when the refrigeration system is running, the air baffle will be energized to open. (See Figure 3-77) When the temperature in the lower drawer reaches low offset, the air baffle is closed.

Though the compartment air temperatures will fluctuate, the LCD displays the average compartment temperatures (See Figure 3-78).

NOTE: *If the temperature in the lower compartment rises five degrees above its high offset and the upper compartment is not calling for cooling, the air baffle will open and the evaporator fan will be energized, but the compressor and condenser fan will remain off. The air baffle will remain open until both compartments are equal in temperature.*

NOTE: *If the compartment temperature should ever exceed either the high offset or low offset (example: when a door is left open), the temperature displayed on the LCD will change by one degree per minute.*

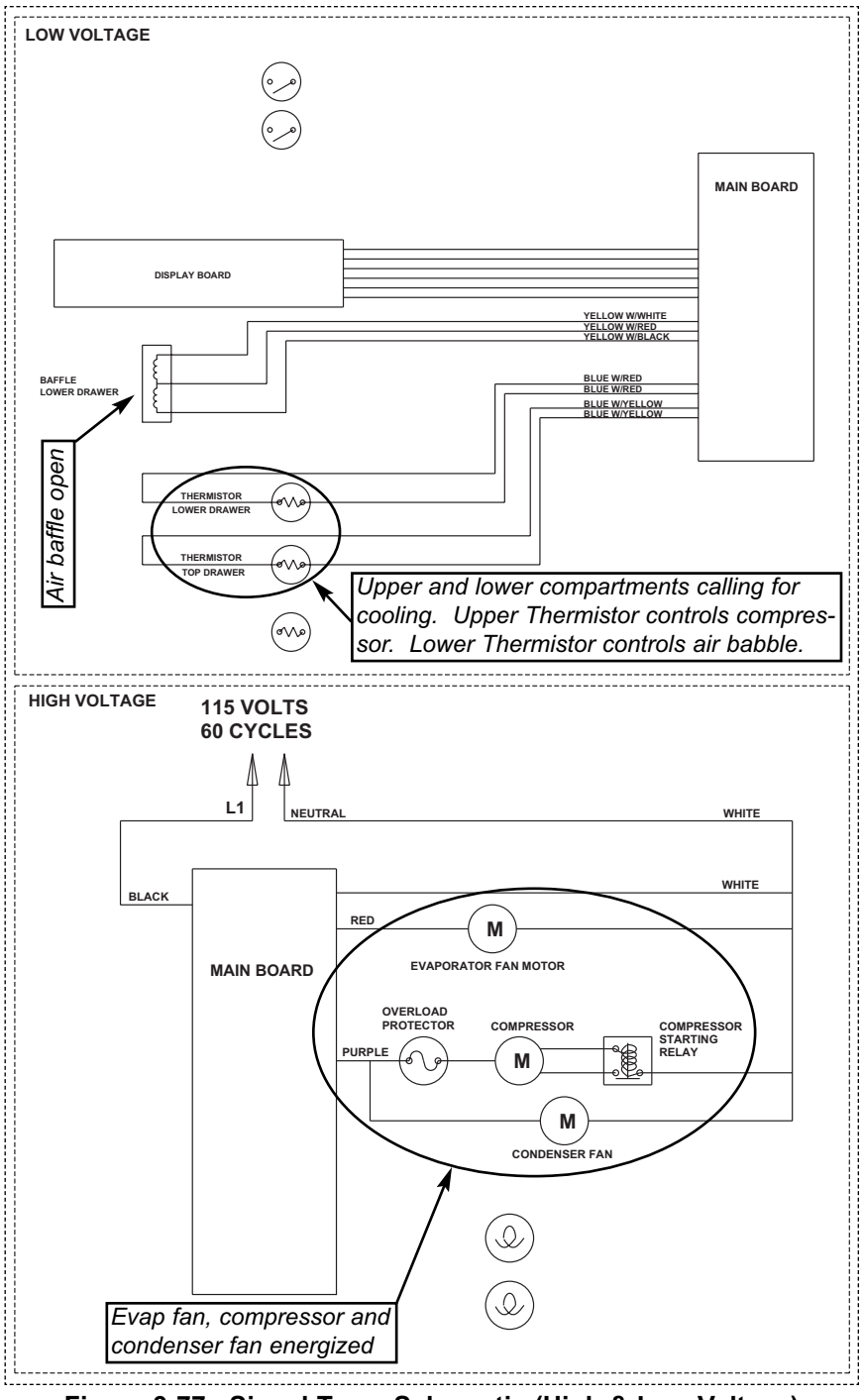


Figure 3-77. Signal Trace Schematic (High & Low Voltage) of Model 700BR-2 with Both Compartments Calling for Cooling

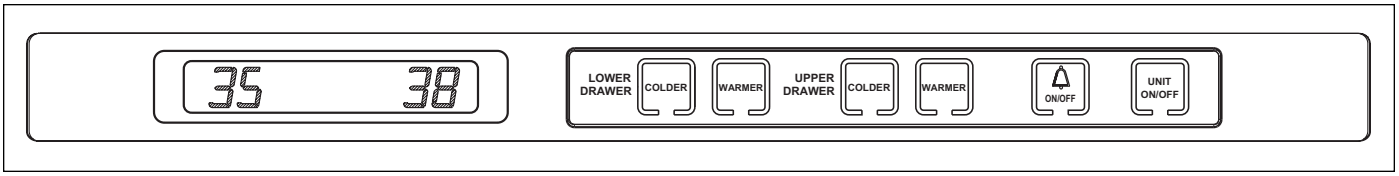


Figure 3-78. Average Refrigerator Compartment Temperatures Displayed

Monitor, Regulate and Display Temperatures in the 700BF/I-2

The two drawers of the 700BF/I-2 are considered one compartment/zone. It is not possible to set two different set-points for the individual drawers.

The temperature signal from the thermistor in the upper reed switch is monitored by the microprocessor, and displayed on the LCD. Though the compartment air temperature does fluctuate, the LCD displays the average temperature (See Figure 3-80). When the compartment temperature reaches high offset, the microprocessor supplies power to the evaporator fan, compressor and condenser fan. (See Figure 3-79). When the compartment temperature reaches low offset, the microprocessor interrupts power to the compressor and evaporator fan, cycling them off.

NOTE: *If the compartment temperature should ever exceed either the high offset or low offset (example: when a door is left open), the temperature displayed on the LCD will change by one degree per minute.*

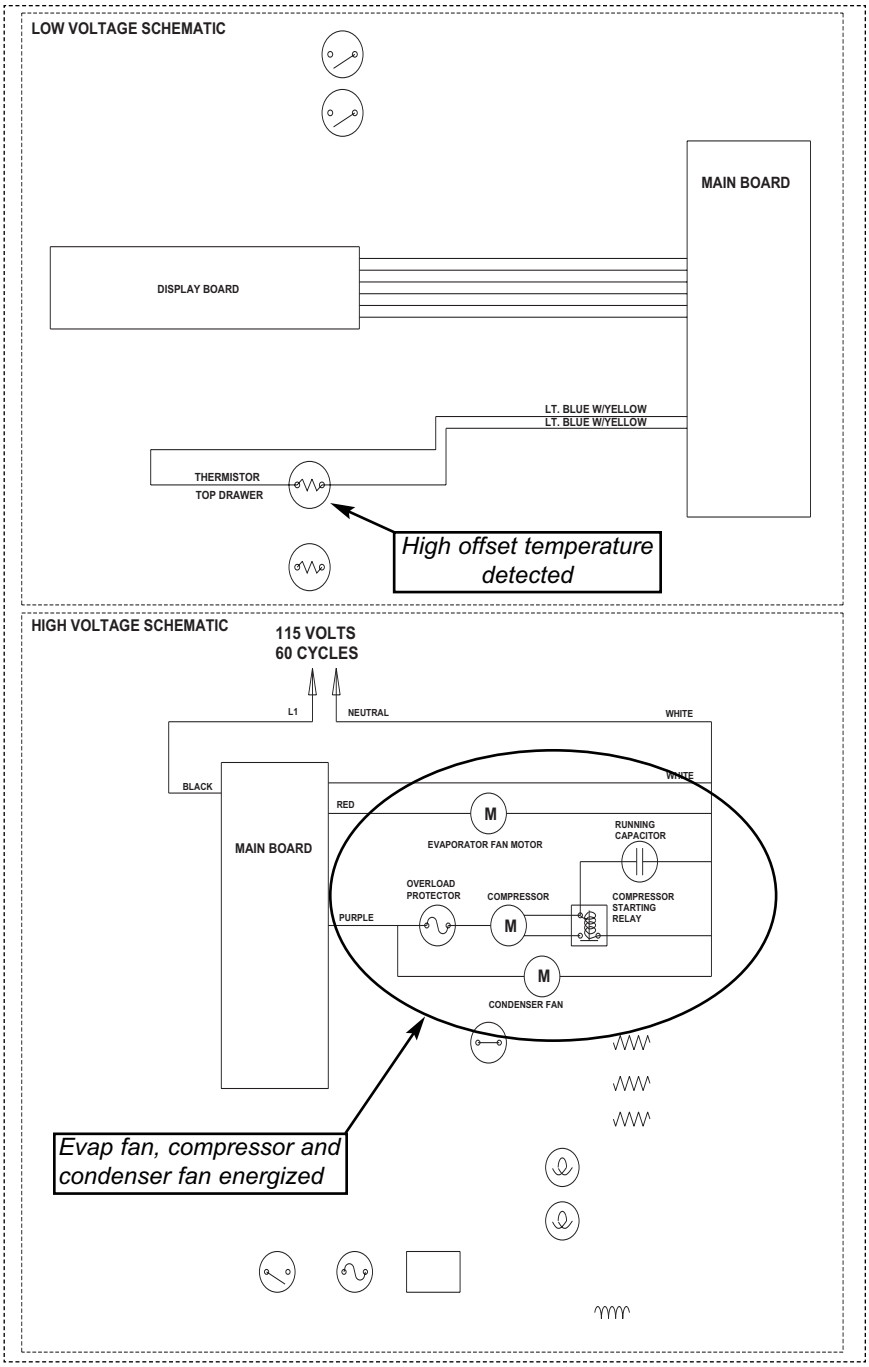


Figure 3-79. Signal Trace Schematic (High & Low Voltage) of 700BF/I-2 Calling for Cooling

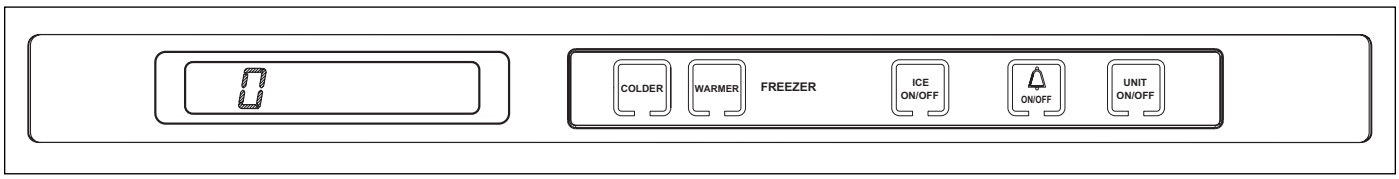


Figure 3-80. Average Freezer Compartment Temperature Displayed

Monitor and Control Refrigerator Off-Cycle Defrost in the 700BR-2

If the the upper drawer compartment in a 700BR-2 calls for cooling (upper compartment at high offset temperature), but the temperature sensed by the evaporator thermistor has not reached 38°F (3°C), the evaporator fan will be energized, but power to the compressor and condenser fan will wait. This allows the refrigerator evaporator to fully defrost before the compressor and condenser fan are energized. (See Figure 3-81)

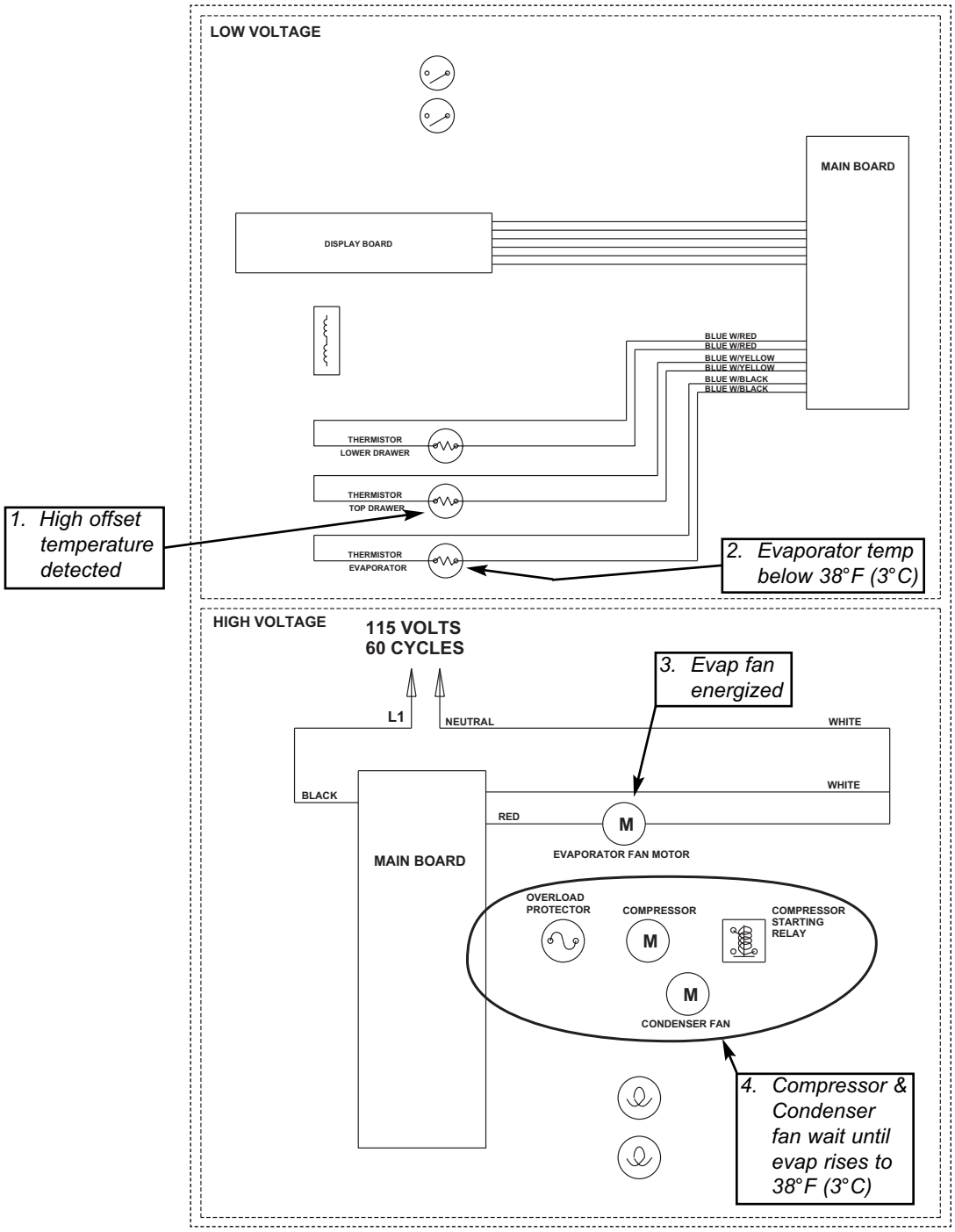


Figure 3-81. Signal Trace Schematic (High & Low Voltage) of Model 700BR-2 Refrigerator Off-Cycle Defrost

Monitor and Control "Adaptive Defrost" in the 700BF/I-2

Initially, the freezer compressor will cycle-run for twelve hours, after which the microprocessor sends the signal to the defrost relay on the control board to close. This supplies power to the defrost heater, and the compressor is switched off. With the "Adaptive Defrost" technique, the length of time that the heater stays on to heat the evaporator to 52°F is observed by the microprocessor via the evaporator thermistor.

NOTE: *The defrost terminator in a 700BF/I-2 is there only to prevent the defrost heater from staying energized too long, in the event of an evaporator thermistor failure.*

The microprocessor then determines the number of hours before the next defrost. If the heater stays on for a shorter time than specified, the microprocessor increases the next defrost interval. If the heater stays on longer than specified, the electronic control decreases the next defrost interval. (See Figure 3-82) This is an ongoing process whereby the defrost time and the defrost interval will vary by unit use.

NOTE: *A five minute time delay/dwell follows all defrosts. At the end of the five minute dwell, the compressor is energized, but the evaporator fan will not be energized until the evaporator temperature falls below 35°F (2°C).*

NOTE: *The minimum defrost interval is six hours; the maximum defrost interval is forty-two hours; the maximum defrost duration is twenty minutes.*

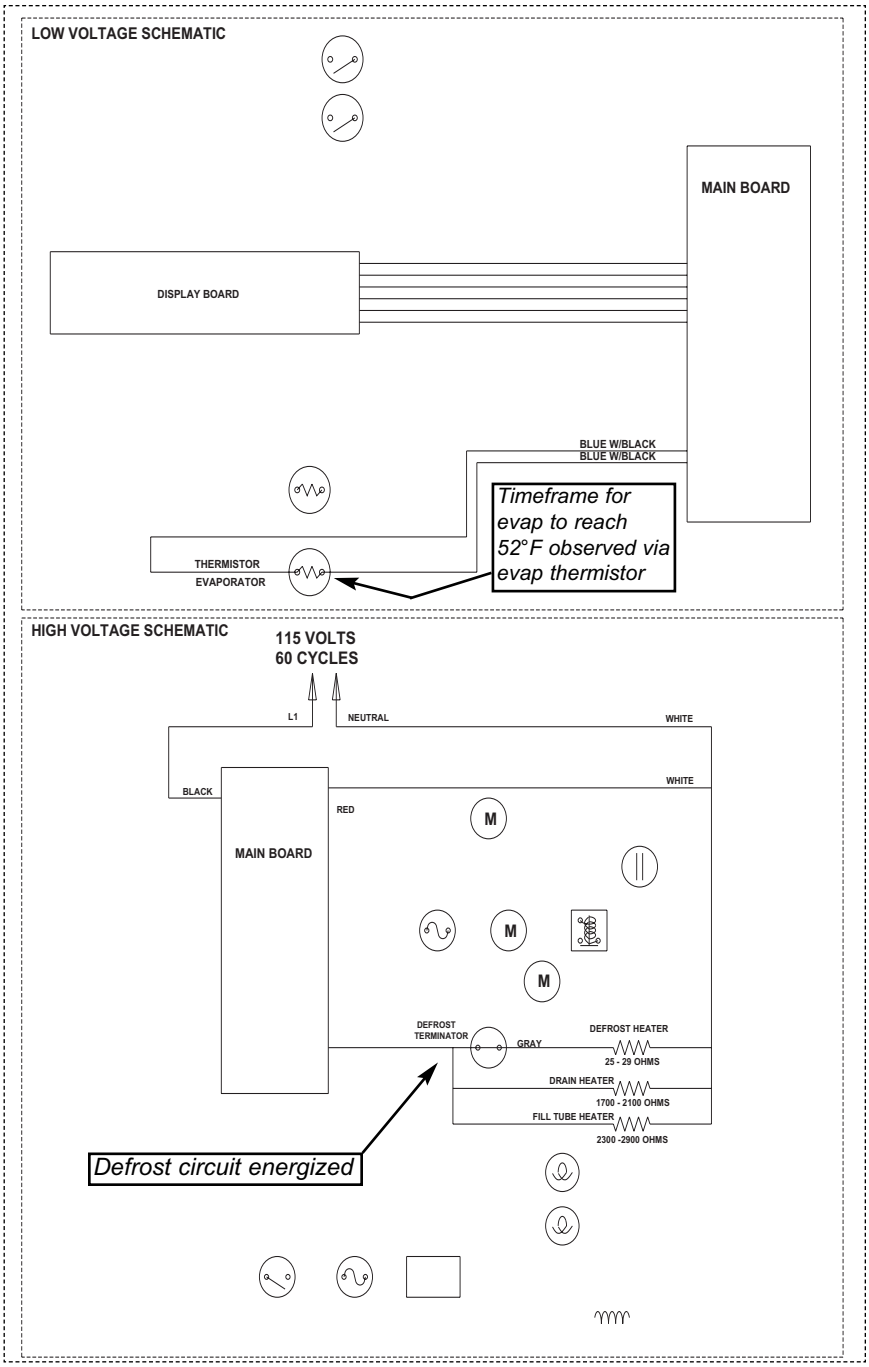


Figure 3-82. Signal Trace Schematic (High & Low Voltage) of Model 700BF/I-2 Freezer Adaptive Defrost

UNIQUE 700- 2 BASE UNIT ELECTRONIC CONTROL INPUT OPERATIONS

The following pages illustrate unique 700-2 base unit electronic control input operations performed at the control panel that you would not expect a customer to perform every day. The following input operations described are Temperature Unit Selection Mode, Sabbath Mode, Showroom Mode and Manual Freezer Evaporator Defrost.

Temperature Units Selection Mode *(Selecting Degrees Fahrenheit or Degrees Celsius Display)*

The electronic control is initially set to display temperature in Fahrenheit (°F) units of measure. Units of measure can be converted from °F to °C (Celsius), and/or back again. This operation is called Temperature Units Selection.

NOTE: *Temperature Units Selection must be performed within the first minute after switching the unit ON..*

To convert the temperature units of measure from Fahrenheit (°F) readings to a Celsius (°C) readings, press and hold the door ajar alarm bell key and the UNIT ON/OFF key simultaneously for five seconds, then release the keys. (See Figure 3-83) "°C" will appear on the LCD indicating that temperatures will now be displayed in Celsius units of measure. To convert back to Fahrenheit units of measure, repeat the steps above.

NOTE: *Temperature Units Selection Mode will end ten seconds after the last key stroke.*

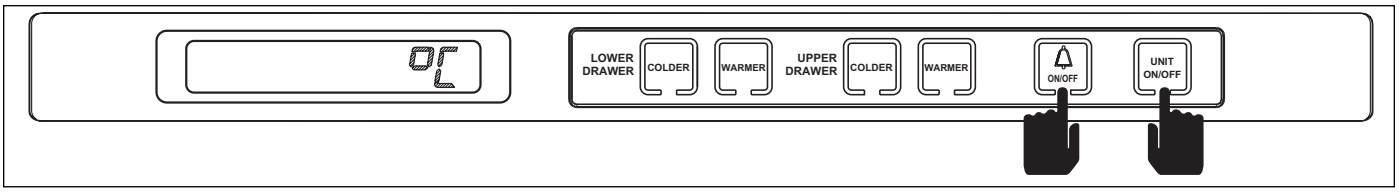


Figure 3-83. Converting Units of Measure *(within first minute after switching unit ON)*
Press and Hold the Door Ajar Alarm Bell Key and The UNIT ON/OFF Key for Five Seconds

Sabbath Mode

Sabbath Mode was incorporated into the 700-2 electronic control system for the observance of certain religious days. Initiating Sabbath Mode disables the light switches and the circuits to the ice making system The door ajar alarm is also disabled when the unit is in Sabbath Mode.

To initiate Sabbath Mode, the unit must first be switched OFF using the UNIT ON/OFF key (See Figure 3-84). With the unit switched OFF, press and hold the UNIT ON/OFF key for ten seconds, then release (See Figure 3-85).

To return to normal lighting operation, press and release the UNIT ON/OFF key.

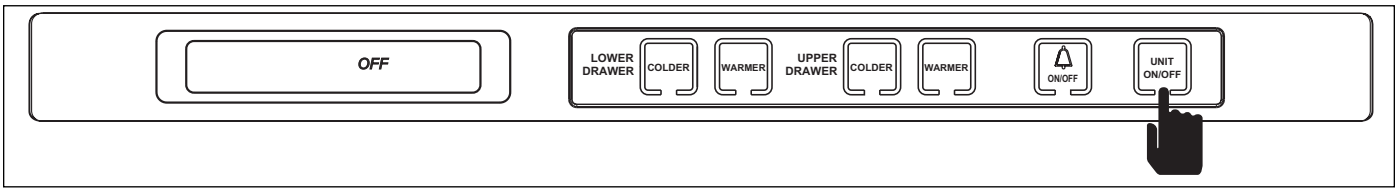


Figure 3-84. To Enter Sabbath Mode, Switch Unit OFF First

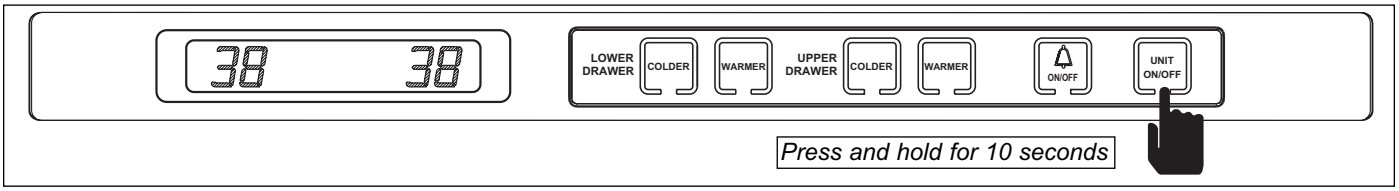


Figure 3-85. After Unit is Switched OFF, Press and Hold the UNIT ON/OFF Key for Ten Seconds

Showroom Mode

Showroom Mode was incorporated into the 700-2 electronic control system so that Integrated 700-2 Series units could be displayed in a showroom setting. When in Showroom Mode, all cooling functions are disabled, but the lighting system remains active.

To initiate Showroom Mode, the unit must first be switched OFF using the UNIT ON/OFF key (See Figure 3-86). With the unit switched OFF, press and hold the WARMER and COLDER keys, then press the UNIT ON/OFF key, then release all three keys (See Figure 3-87).

To return unit to normal operating condition, repeat the steps above.

NOTE: *Always recheck set-points after returning unit to normal operating condition.*

NOTE: Unlike the 700-2 tall units, it is not possible to determine if a base unit is in Showroom Mode by initiating Diagnostic Mode and looking for “Sr”.

- To determine if a 700BF/I-2 unit is in Showroom Mode, press the ICE key on the control panel and listen for the relay on the control board to “click.” If a “click” is not heard, the unit is in Showroom Mode.
- To determine if a 700BR-2 unit is in Showroom Mode, open both drawers to warm the compartments, adjust set-points to 34°F (1°C) and listen for the compressor and condenser fan to energize. Due to the three minute mini-mum-off time, and depending on how cold the compartments are, this may take several minutes to verify.

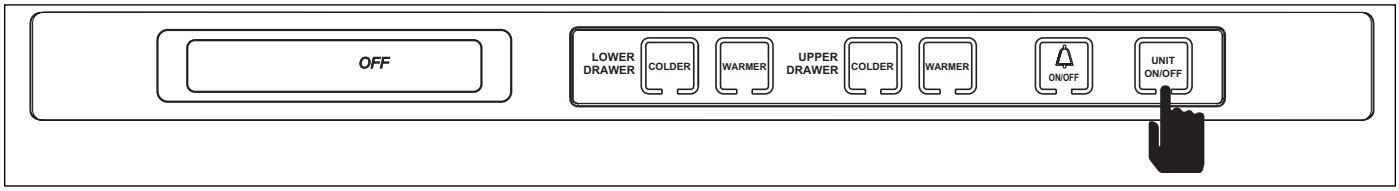


Figure 3-86. To Enter (or Exit) Showroom Mode, Switch Unit OFF First

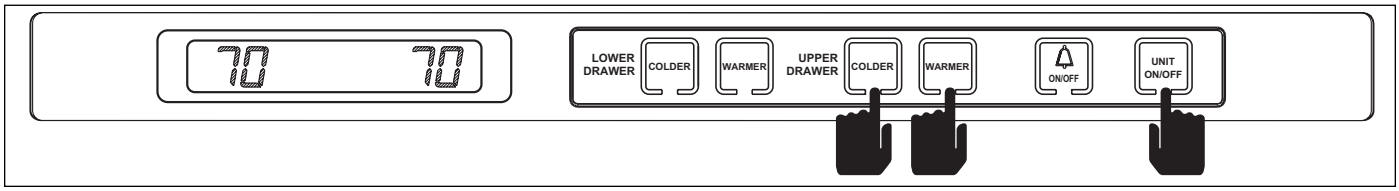


Figure 3-87. After Unit is Switched OFF, Press and Hold the WARMER and COLDER Keys, Then Press the UNIT ON/OFF Key

Manual Freezer Evaporator Defrost (700BF/I-2 Only)

Manual Freezer Evaporator Defrost was incorporated into the 700BF/I-2 electronic control to assist in servicing and diagnosing.

To manually initiate freezer evaporator defrost, press and hold the ICE key at the control panel for five seconds, then release the key (See Figure 3-88).

NOTE: *Manual Freezer Evaporator Defrost will not operate if unit is in Sabbath Mode.*

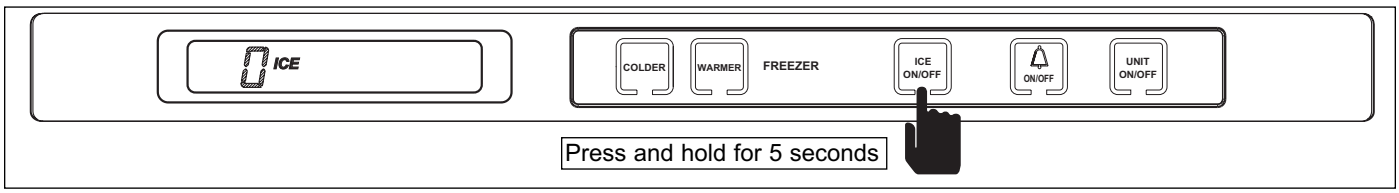


Figure 3-88. Initiate Manual Freezer Evaporator Defrost - Press and Hold the ICE key for Five Seconds

POSSIBLE 700-2 BASE UNIT ERROR INDICATORS

This page contains diagrams illustrating what customers may see on the LCD if a problem/error exists with the unit. (For Model 700BR-2, see Figures 3-89 through 3-93. For Model 700BF/I-2, see Figures 3-92 through 3-94.)

NOTE: A blinking "SERVICE" annunciator in a base unit indicates thermistor faults only. Unlike the tall units, the blinking "SERVICE" annunciator cannot indicate excessive compressor run, because the length of compressor run-time is not monitored on base units.

NOTE: *Unlike the 700-2 tall units, the "SERVICE" and "ICE" annunciators on the LCD of a 700BFI-2 will not blink, and the ice making system will not be disabled, if the water valve is energized for more than 15 seconds.*

NOTE: *To clear thermistor error indicators, the problem must be corrected.*

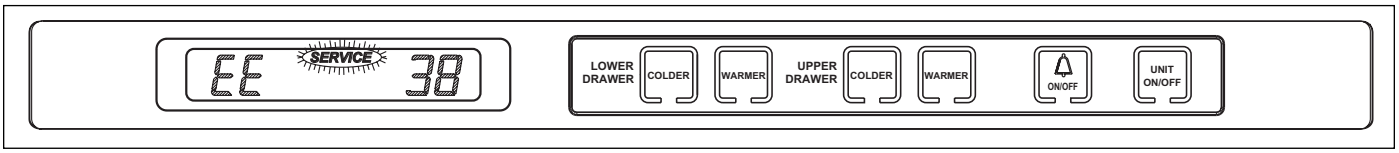


Figure 3-89. For Model 700BR-2
"EE" Displayed at Left and "SERVICE" Flashing = Lower Compartment Thermistor (or its Wiring) Fault

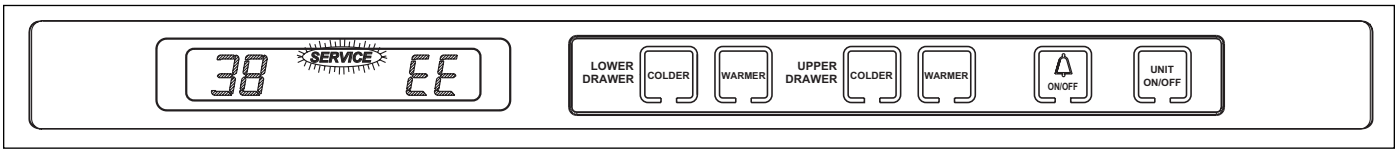


Figure 3-90. For Model 700BR-2
"EE" Displayed at Right and "SERVICE" Flashing = Upper Compartment Thermistor (or its Wiring) Fault

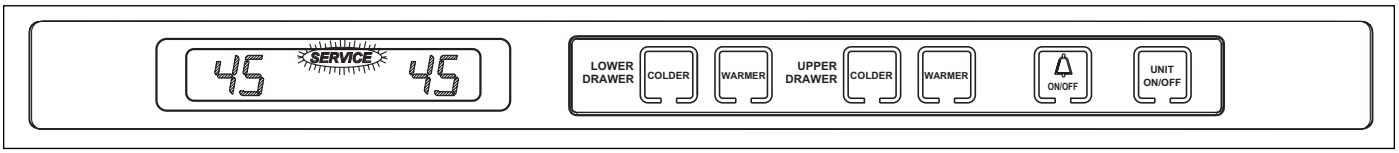


Figure 3-91. For Model 700BR-2
"SERVICE" Blinking = Evaporator Thermistor Fault or Break in Thermistor Wiring

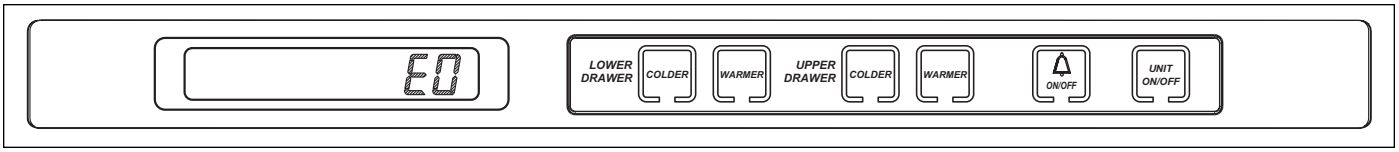


Figure 3-92. For Model 700BR-2 & 700BF/I-2
"E0" Displayed = Communication Error Between Control Board and Control Panel

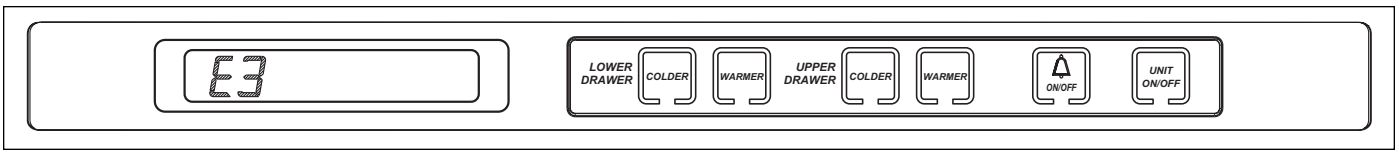


Figure 3-93. For Model 700BR-2 & 700BF/I-2
"E3" Displayed = Communication Error Between Control Board and Control Panel

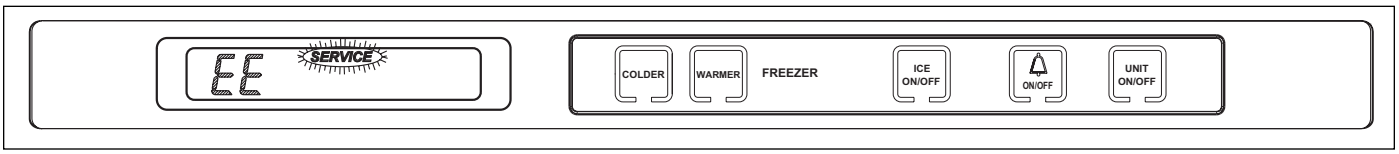


Figure 3-94. For Model 700BF/I-2
"EE" Displayed at Left and "SERVICE" Flashing = Freezer Compartment Thermistor (or its Wiring) Fault

700-2 BASE UNIT ELECTRONIC CONTROL TROUBLESHOOTING INPUT OPERATIONS

This page illustrates 700-2 base unit troubleshooting input operations performed at the control panel, which at this writing is only Diagnostic Mode.

Diagnostic Mode

Diagnostic Mode allows the service technician to observe real-time temperature readings from the thermistors in both compartments and at both evaporators without off-set adjustments or temperature averaging.

NOTE: *There is only one compartment thermistor and one evaporator thermistor in the model 700BF/I-2.*

NOTE: *Since the Diagnostic Mode varies only slightly between the 700BR-2 and 700BF/I-2, a diagram of the 700BR-2 control panel is used to illustrate Diagnostic Mode key strokes.*

To initiate Diagnostic Mode, the unit must be ON. With the unit ON, press and hold either COLDER key, then press the UNIT ON/OFF key, then release both keys. The left temperature display area indicates the real-time temperature of the first thermistor being read. The left temperature display area shows a code which indicates the location of the thermistor, and all annunciators illuminate on the LCD indicating the unit is in Diagnostic Mode (See Figure 3-95 and Thermistor Location Code Tables at bottom of page). Pressing either COLDER key while in Diagnostic Mode will toggle to the next thermistor location (See Figure 3-96 and Thermistor Location Code Tables at bottom of page).

NOTE: *If "EE" is observed in the left temperature display area during Diagnostic Mode, the thermistor in that location is defective or there is a break in that thermistor's wiring.*

NOTE: *Diagnostic Mode will end twenty seconds after the last key stroke.*

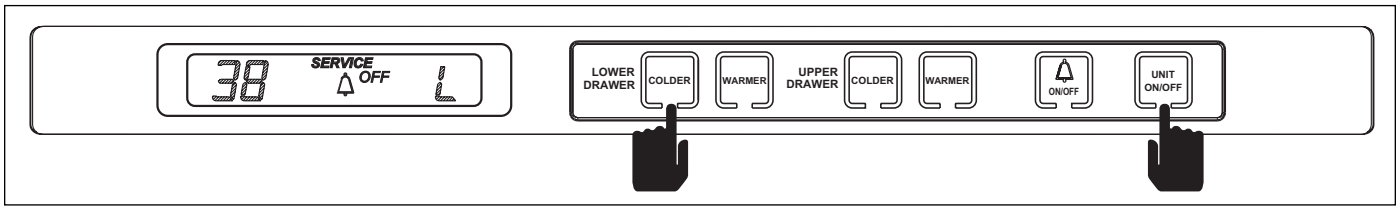


Figure 3-95. Initiating Diagnostic Mode
Press and Hold Either COLDER Key, Then Press the UNIT ON/OFF Key

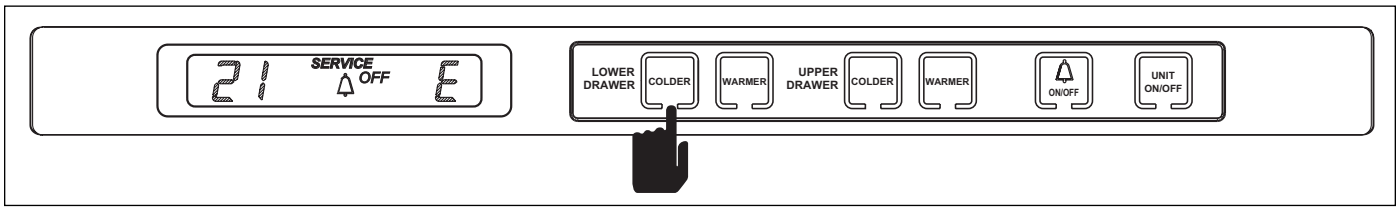


Figure 3-96. Toggling Through Temperature Readings in Diagnostic Mode
Press Either COLDER Key

Base Unit Thermistor Location Code Tables

700BR-2	
THERMISTOR LOCATION	**CODE**
Lower Compartment	***L***
Upper Compartment	***U***
Evaporator	***E***

700BF/I-2	
THERMISTOR LOCATION	**CODE**
Freezer Compartment	***F***
Evaporator	***E***

ADDITIONAL 700-2 BASE UNIT ELECTRONIC CONTROL NOTES

- There is not a 45 minutes dwell after each ice harvest in the BFI-2.

- ***The*** *"SERVICE" and "ICE" annunciators on the LCD of a 700BFI-2 will not blink, and the ice making system will not be disabled, if the water valve is energized for more than 15 seconds.*

- There is not a Manual Compartment Disable Mode in 700-2 base units, because there is only one compressor.

- There is not a Manual Component Activation Mode in 700-2 base units.

- The 700-2 Base unit's electronic control system does not have Error Codes.

- There is not a Temperature Log recall Mode for the 700-2 base units.

SECTION 4

SEALED SYSTEM INFORMATION

HFC-134a REFRIGERANT SERVICE INFORMATION

The 700-2 Series sealed systems contain HFC-134a refrigerant. This section provides some general rules for working with 134a, and explains procedures to be followed while servicing the sealed system. This is followed by diagrams which illustrate sealed system operation, then model-specific refrigerant flow diagrams.

⚠ CAUTION

134a refrigerant requires Synthetic Ester oil in the compressor, and does not tolerate contamination from other refrigerants, moisture, petroleum-based lubricants, silicone lubricants, cleaning compounds, rust inhibitors, leak detection dyes, or any other type of additive.

General Rules for Working with 134a Refrigerant

- Use equipment dedicated to 134a sealed system service only.
- Use only 134a refrigerant for back-flushing and sweep charging.
- Always replace the filter-drier when servicing the sealed system.
- The filter-drier must be cut from the sealed system. Never un-braze the drier as the heat will drive moisture back into the sealed system.
- Do not leave sealed system nor replacement compressor open to the atmosphere for more than 10 minutes.
- When the rubber plugs are pulled from the service compressor, a release of pressure should be heard. If no release of pressure is heard, do not use the compressor.
- Use ONLY virgin 134a refrigerant when recharging the sealed system.

SEALED SYSTEM REPAIR PROCEDURES

Problem	Service Procedures
Non-Operating, Inefficient, Noisy Compressor *(**NOTE**: To check for a non-operating compressor, a hard start kit can be used)*	a. Capture refrigerant b. Replace compressor c. Replace filter-drier d. Evacuate or sweep charge system e. Recharge system with Virgin 134a refrigerant
High Side leak	a. Capture refrigerant b. Repair leak c. Replace filter-drier d. Evacuate or sweep charge system e. Recharge system with Virgin 134a refrigerant
Low Side Leak	a. Capture refrigerant b. Repair leak (if at solder joint) or replace part c. Back flush high side of sealed system d. If all refrigerant has escaped and system is in a vacuum, replace compressor e. Replace filter-drier f. Evacuate or sweep charge system g. Recharge system with Virgin 134a refrigerant
Contaminated System *Examples:* > *Compressor Burn out* > *Excessive moisture from leak in condensate loop or in low side* > *Plugged capillary tube*	a. Capture refrigerant b. Repair leak (if at solder joint) or replace part c. Back flush high side of sealed system d. Replace compressor e. Replace filter-drier f. Replace heat exchanger if cap tube is clogged g. Install a low side drier on suction line h. Evacuate or sweep charge sealed system i. Recharge with Virgin 134a refrigerant
Restriction *(**NOTE**: If restriction is due to sealed system being contaminated, see Contaminated Sealed System above.)*	a. Capture refrigerant b. Locate and remove restriction or locate and replace part c. Back flush high side of sealed system d. Replace filter-drier e. Evacuate or sweep charge system f Recharge system with Virgin 134a refrigerant.
Overcharge	a. Capture refrigerant b. Replace filter-drier c. Evacuate or sweep charge system d. Recharge system with Virgin 134a refrigerant

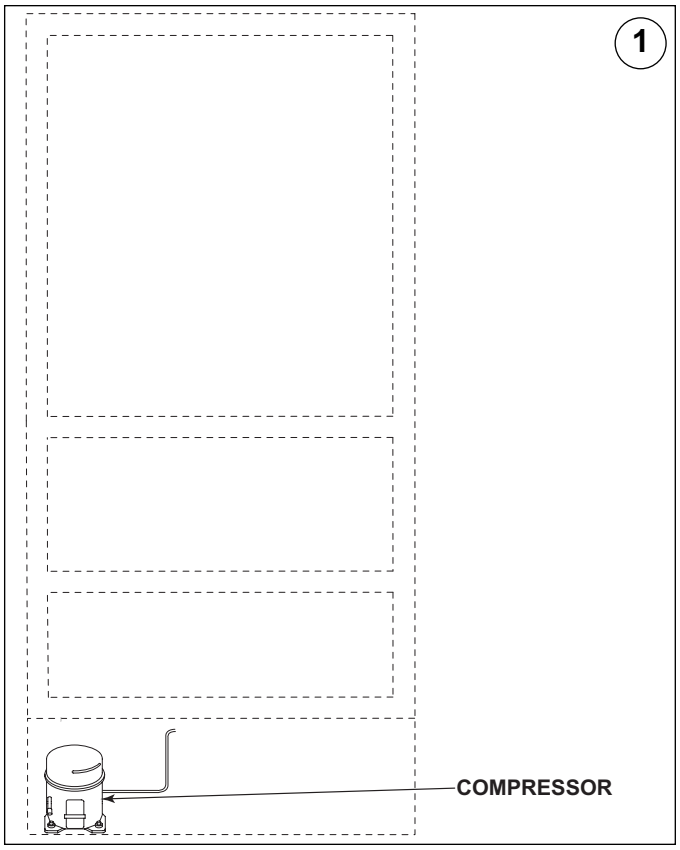
SEALED SYSTEM OPERATION

The six diagrams on these pages illustrate a basic sealed system. The components are listed in order of refrigerant flow, with an explanation of their fundamental role as part of a sealed system. ***NOTE:*** *These illustrations do not represent any specific 700-2 sealed system.*

Compressor (Figure 4-1)
The compressor creates a high side and low side pressure difference in the sealed system by compressing the refrigerant gas, thus raising the pressure and temperature. The compressor pushes this high-pressure/high-heat gas to the condenser.

Condenser (Figure 4-2)
The high-pressure/high-heat gas travels through the condenser, where the heat is dissipated by cooler air being drawn over the condenser tubing by the condenser fan. This changes the gas into a high-pressure/warm liquid that is then routed through the door gasket seat heater loop to prevent sweating. After traveling through the heater loop, the high-pressure/warm liquid enters the high-side filter-drier.

Filter-Drier (Figure 4-3)
The high-pressure/warm liquid travels through the high-side filter-drier, which removes moisture from the refrigerant before it enters the capillary tube.



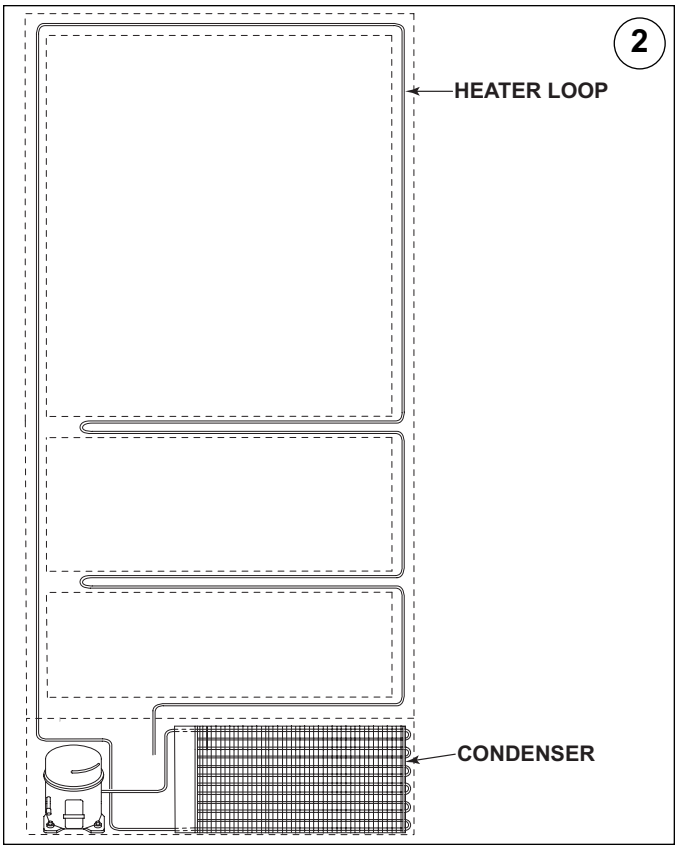


Figure 4-2. Condenser & Heater Loop

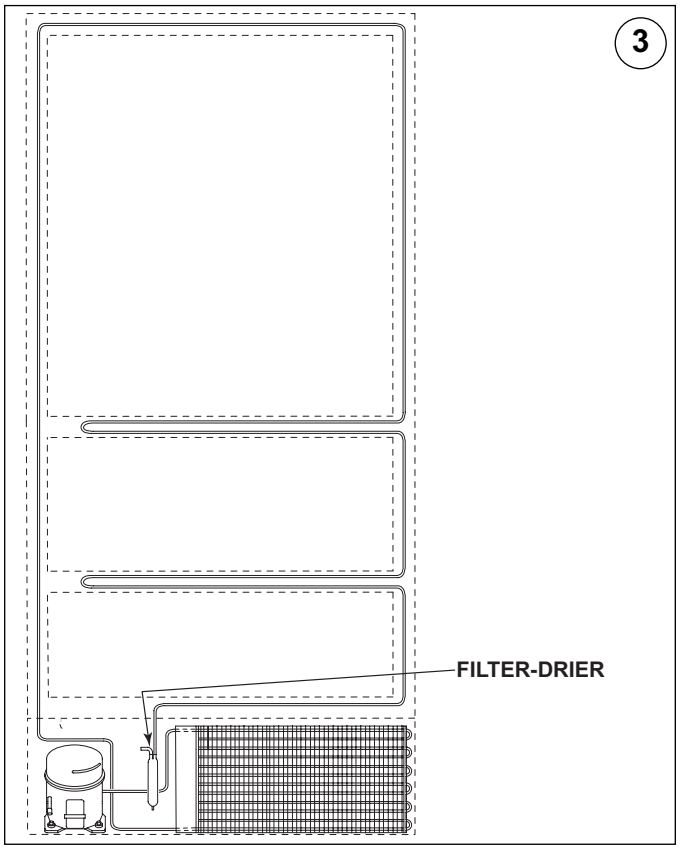


Figure 4-3. Filter-Drier

Capillary Tube (& Heat Exchanger) (Figure 4-4)
The warm liquid refrigerant travels through the long skinny capillary tube which is soldered to the suction line. (These two tubes soldered together create the heat exchanger.) As the warm liquid refrigerant travels through the capillary tube it gives up heat to the cool refrigerant gas traveling through the suction line and the pressure drops, so it is a low-pressure/cool liquid before it enters the evaporator.

Evaporator (Figure 4-5)
As the low-pressure/cool liquid refrigerant enters the evaporator, it vaporizes. This is caused by a dramatic pressure change which occurs when the refrigerant enters the larger diameter evaporator tubing from the smaller diameter capillary tubing. This vapor travels through the evaporator absorbing heat from the compartment, gradually converting it to a cool gas. This cool gas then enters the suction line.

Suction Line (& Heat Exchanger) (Figure 4-6)
The cool gas travels through the suction line which is soldered to the capillary tube. (As mentioned earlier, these two tubes soldered together create the heat exchanger.) As this cool refrigerant gas travels through the suction line it absorbs heat from the warm liquid refrigerant traveling through the capillary tube, making it a luke warm gas. The lukewarm refrigerant gas then returns to the compressor where the process begins again.

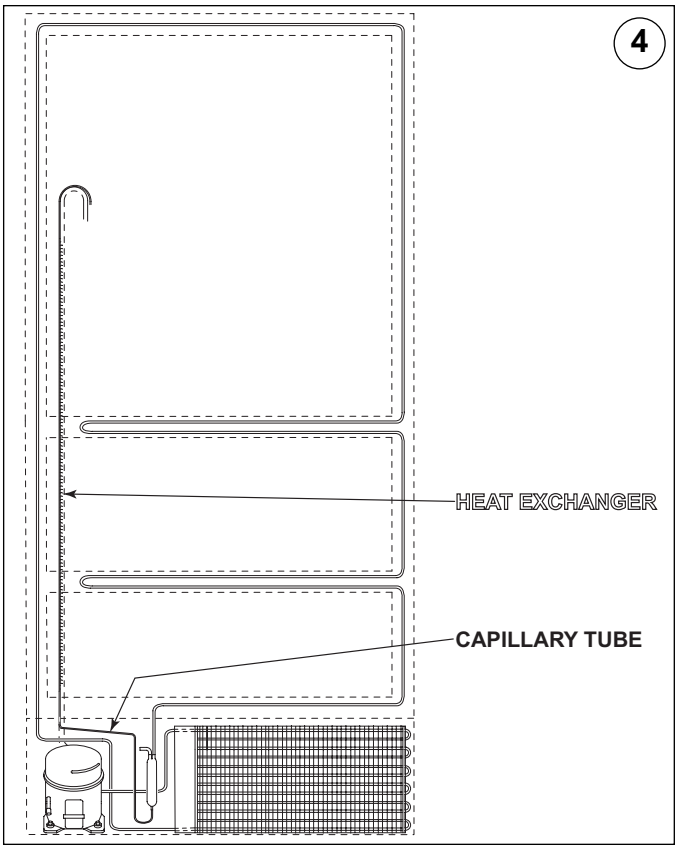


Figure 4-4. Capillary Tube (& Heat Exchanger)

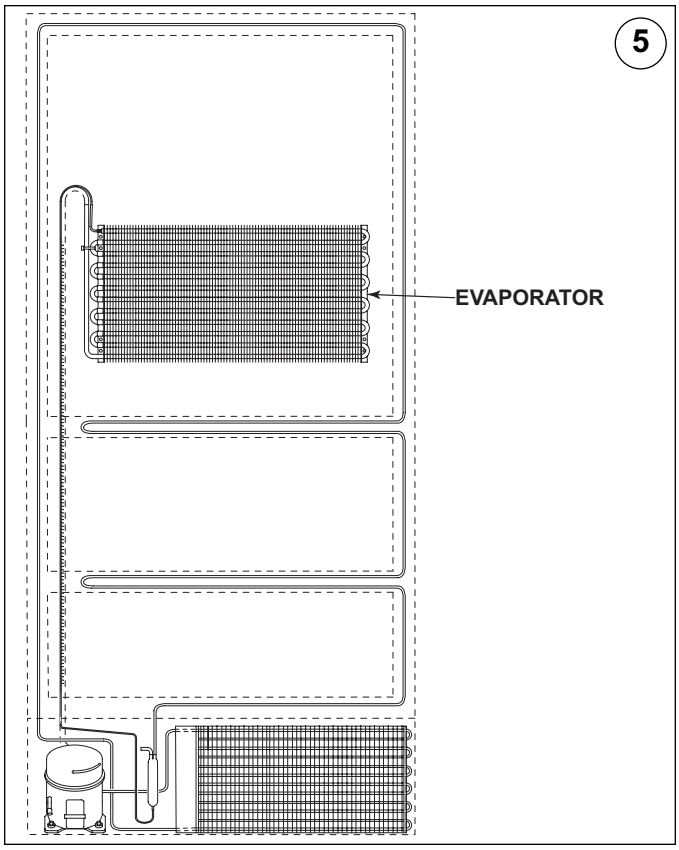


Figure 4-5. Evaporator

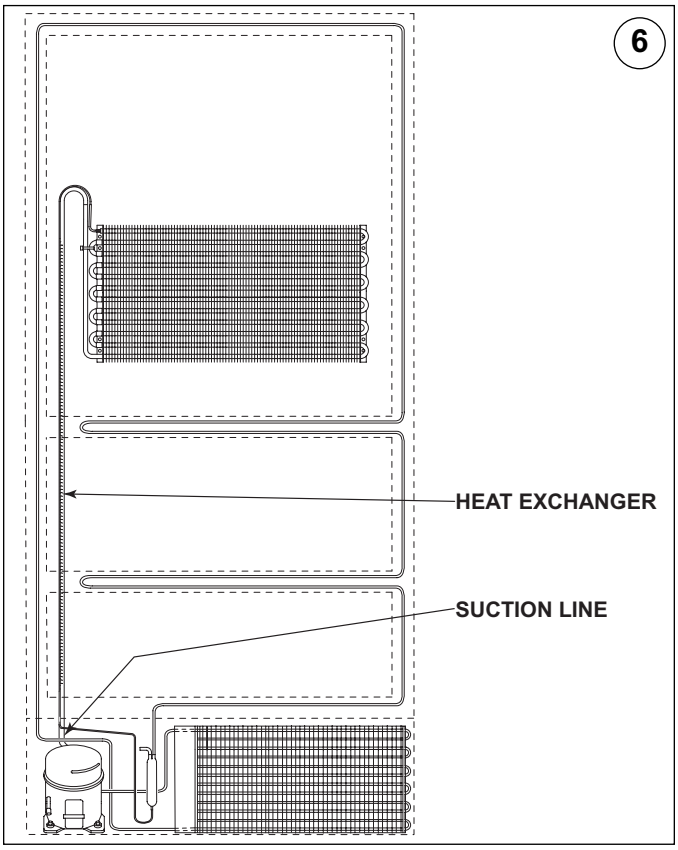


Figure 4-6. Suction Line & Heat Exchanger

SEALED SYSTEM REFRIGERANT FLOW DIAGRAMS

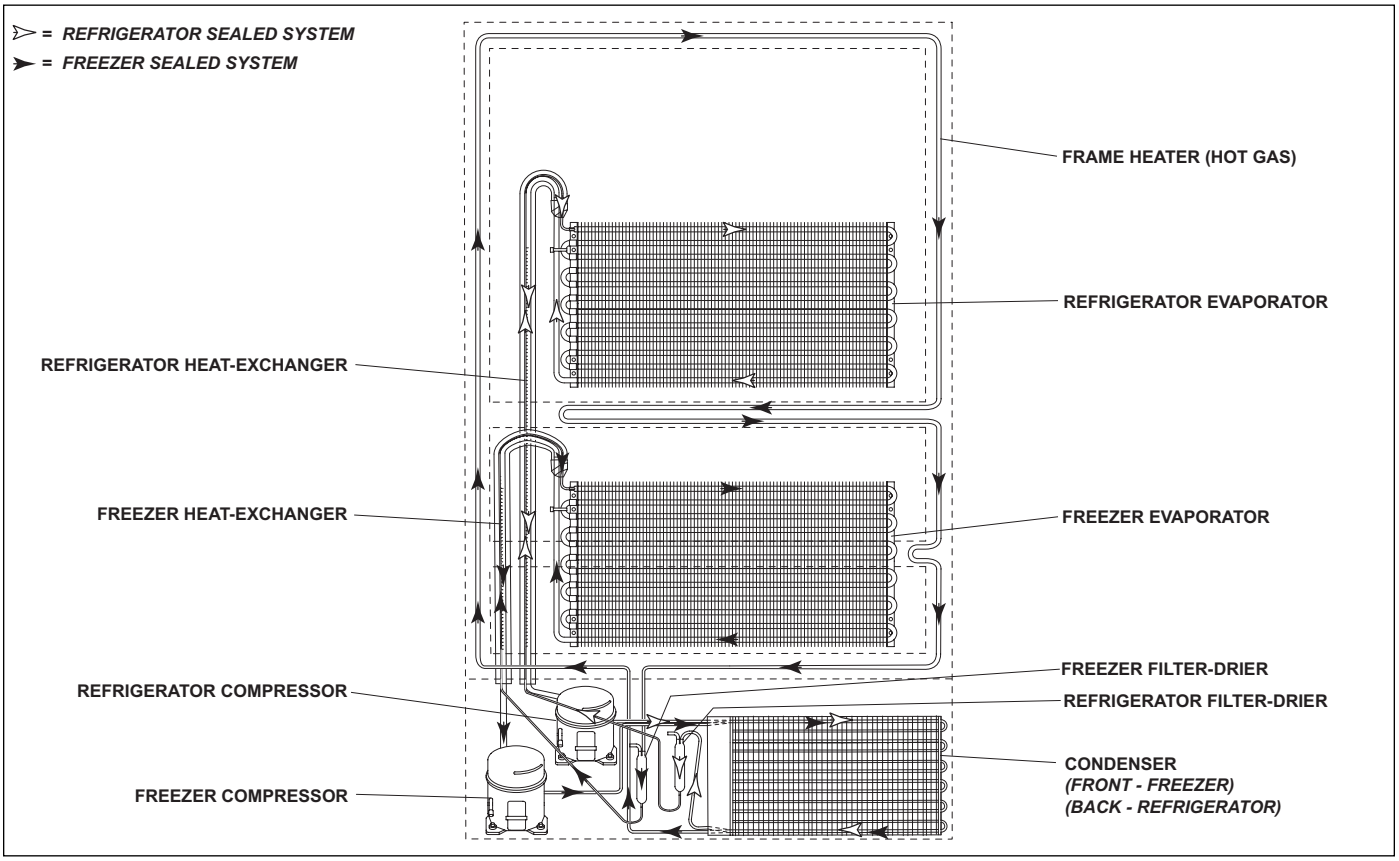


Figure 4-7. Model 700TC/I-2 Refrigerant Flow

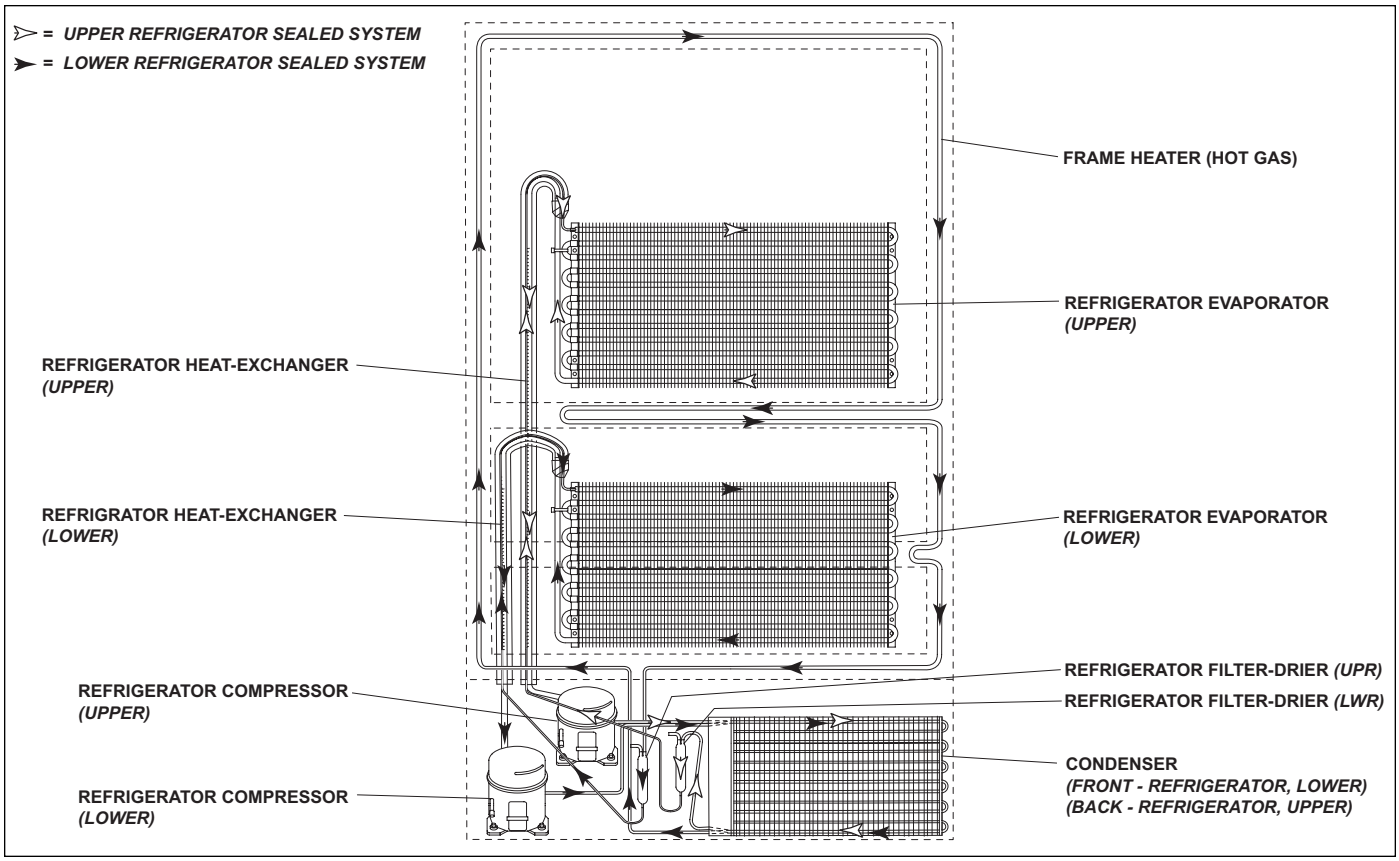


Figure 4-8. Model 700TR-2 Refrigerant Flow

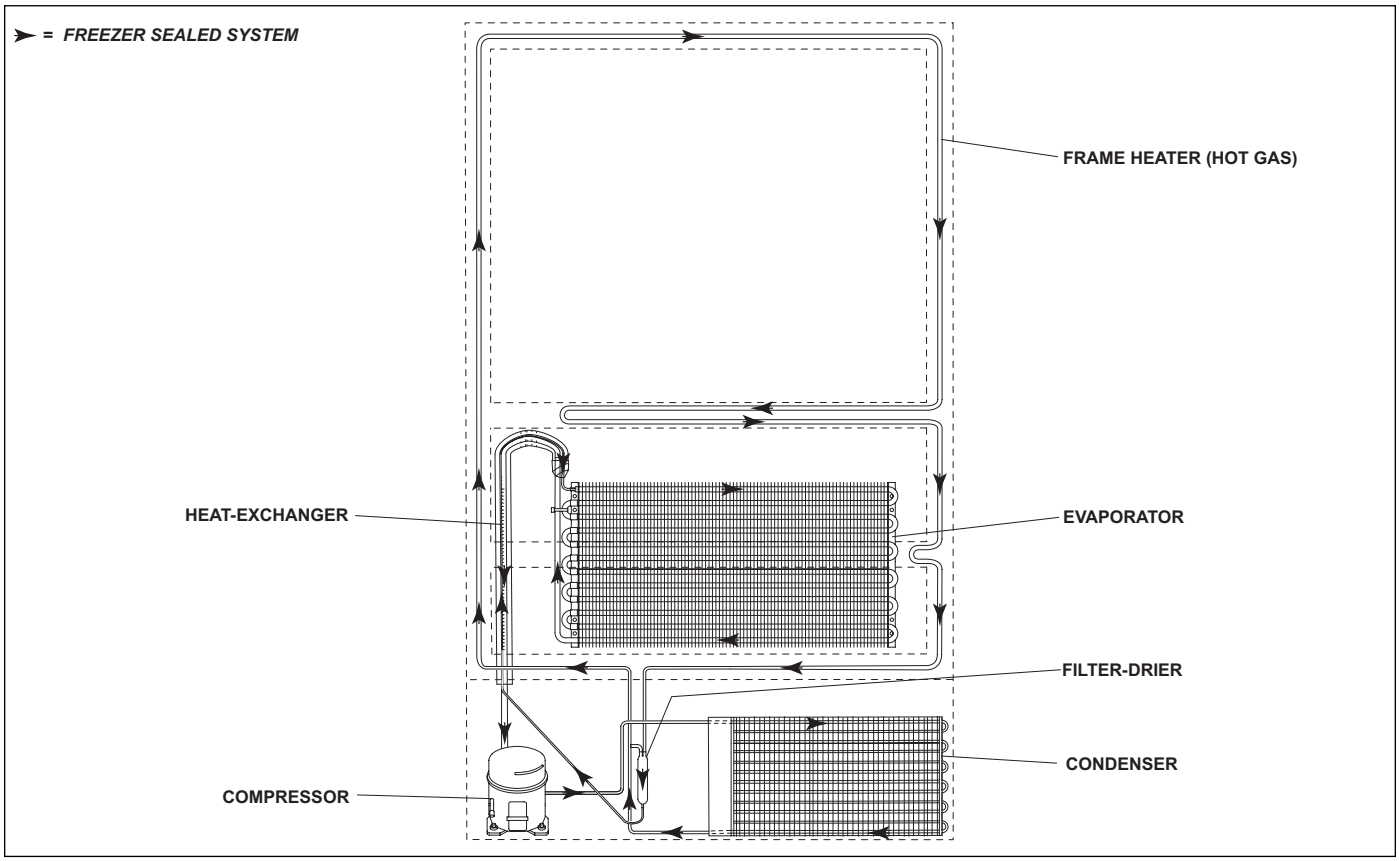


Figure 4-9. Model 700TF/I-2 and 700TF/I-2V Refrigerant Flow

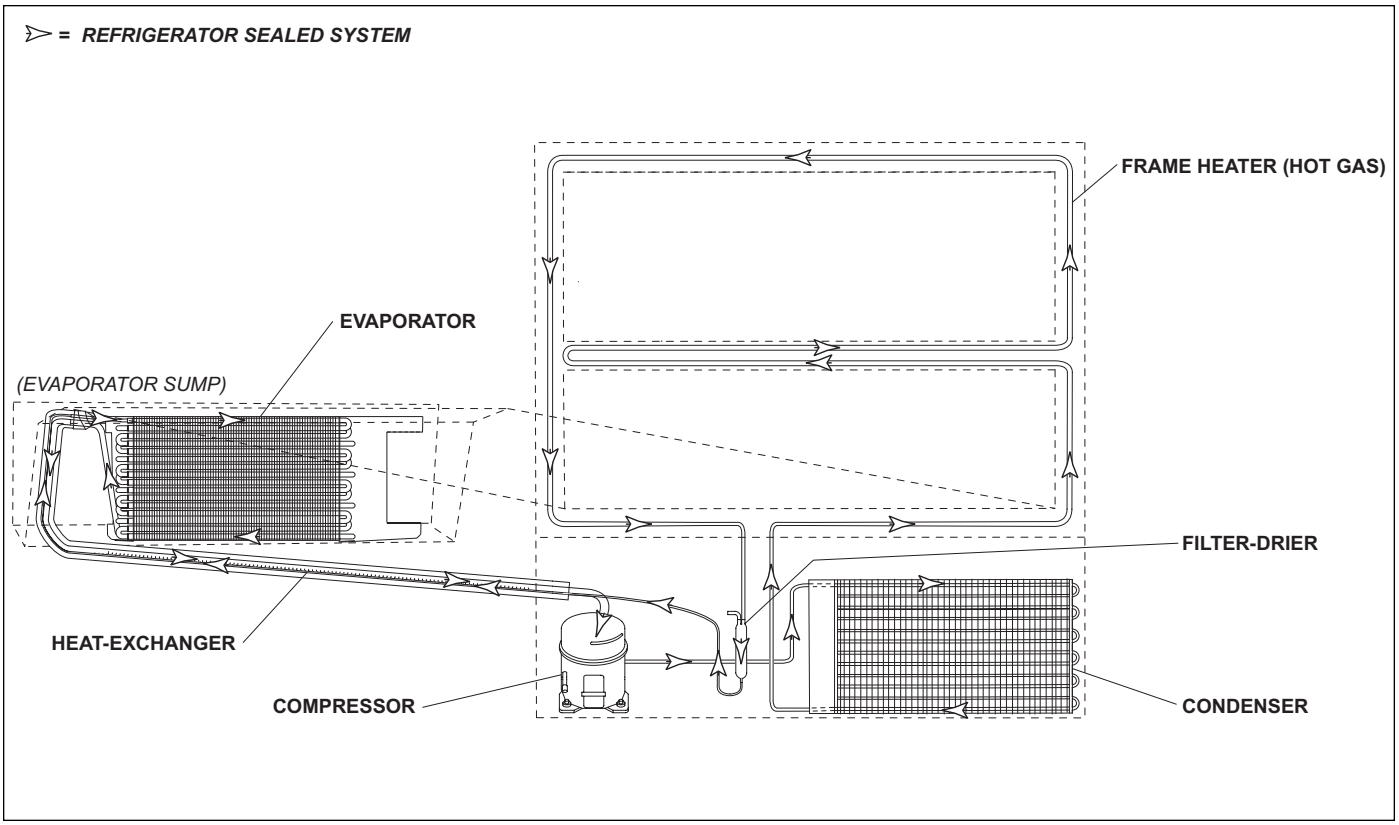


Figure 4-10. Model 700BR-2 Refrigerant Flow

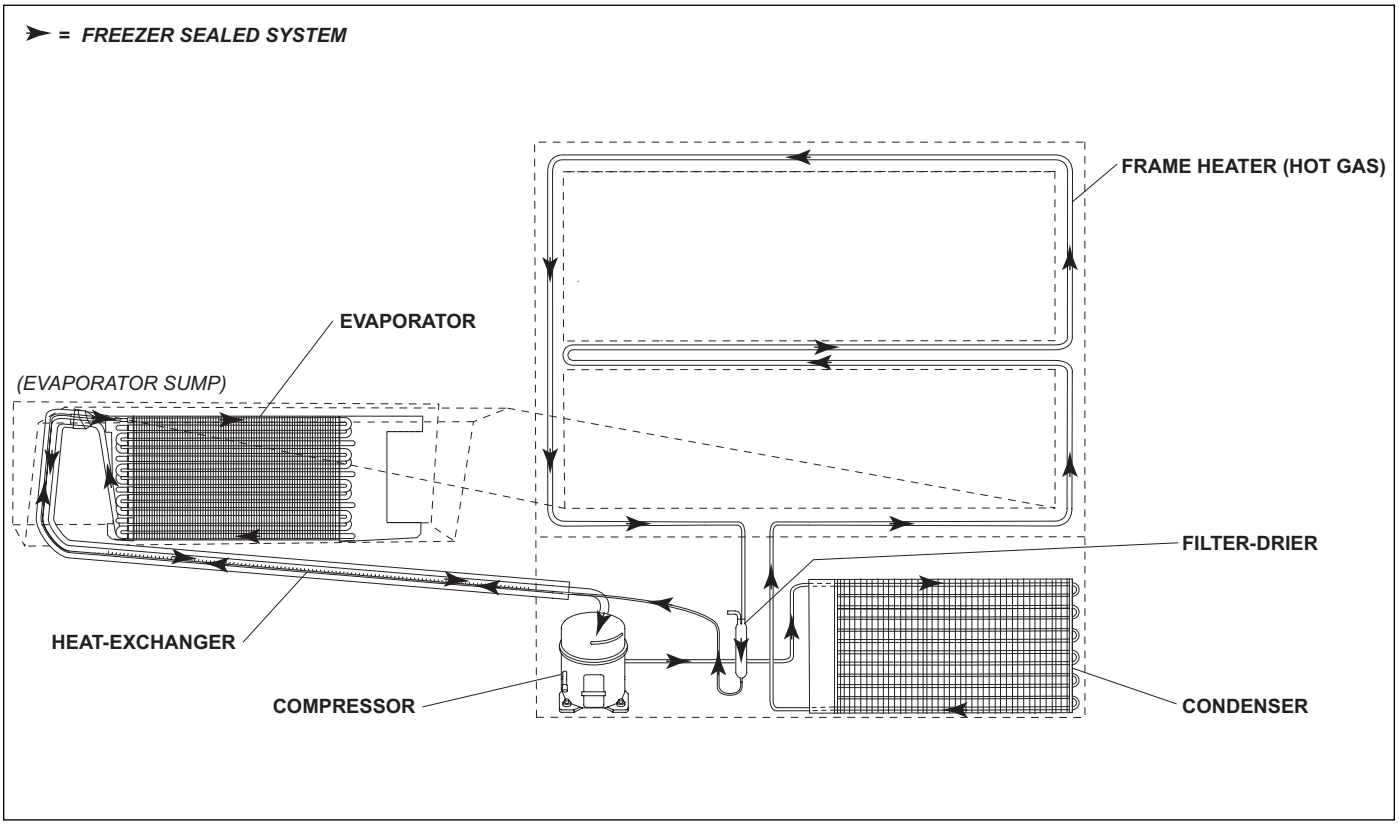


Figure 4-11. Model 700BF/I-2 Refrigerant Flow

SECTION 5

AIR FLOW & FAN BLADE SPACING

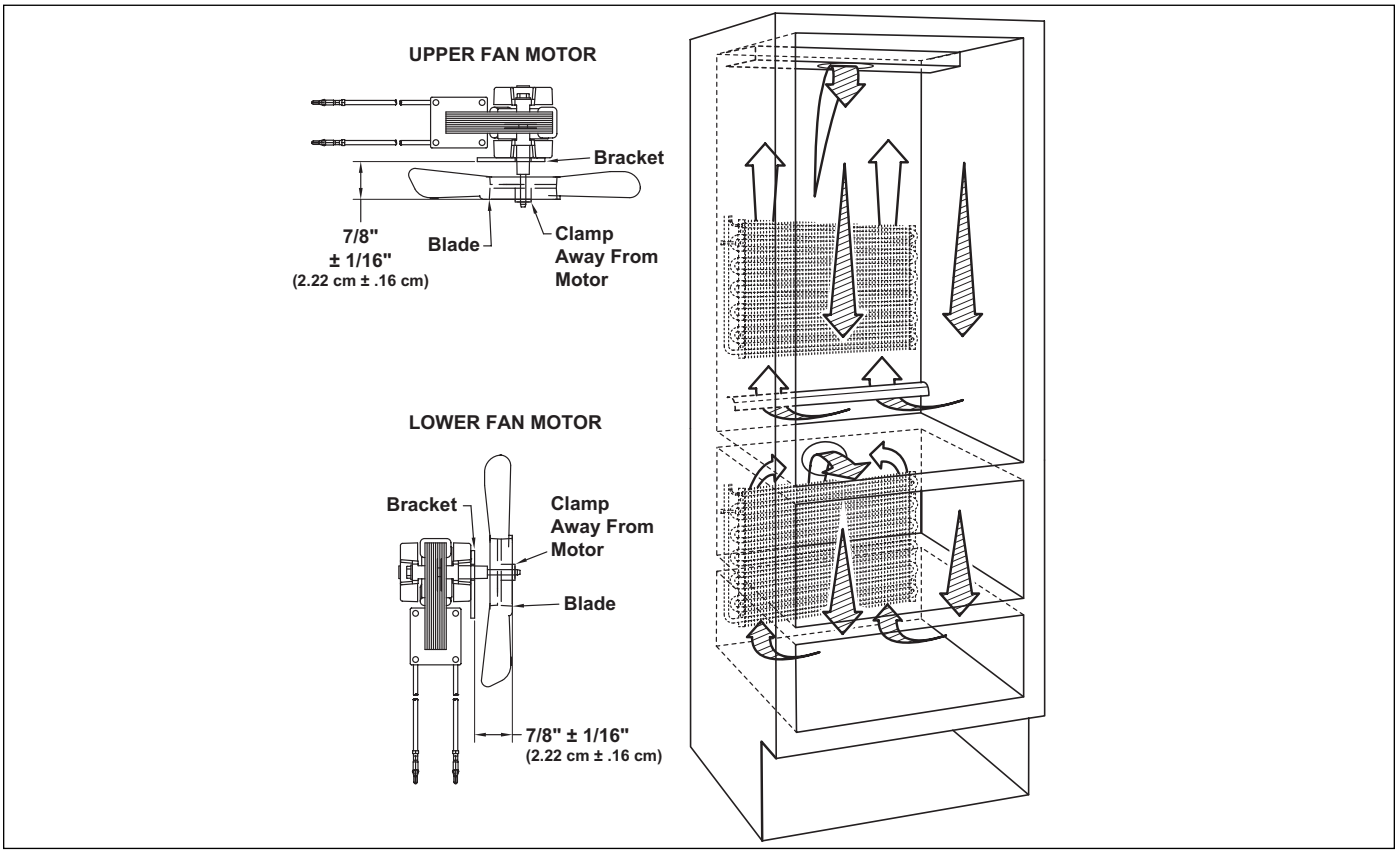


Figure 5-1. 700TC/I-2 Air Flow and Fan Blade Spacing

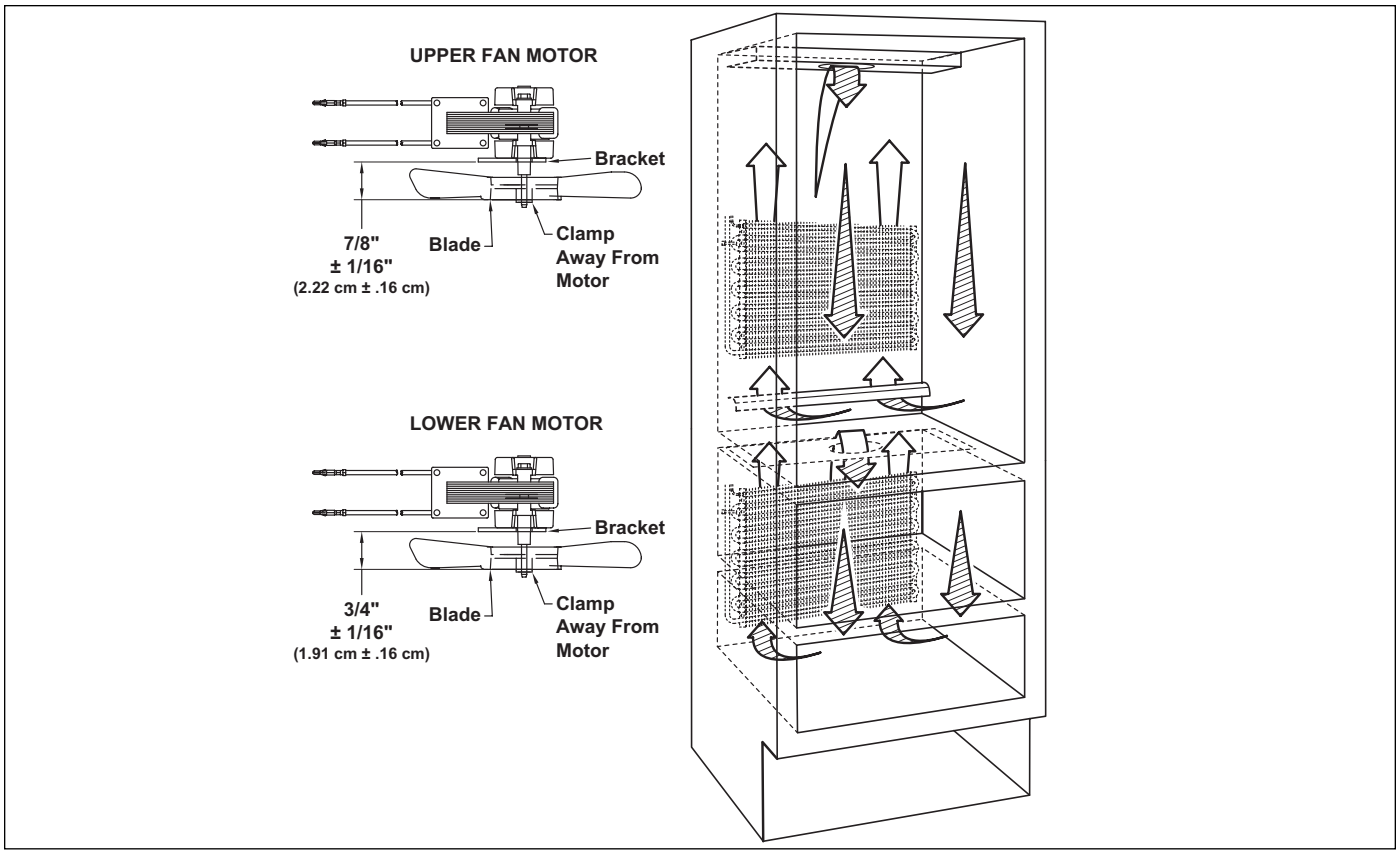


Figure 5-2. 700TR-2 Air Flow and Fan Blade Spacing

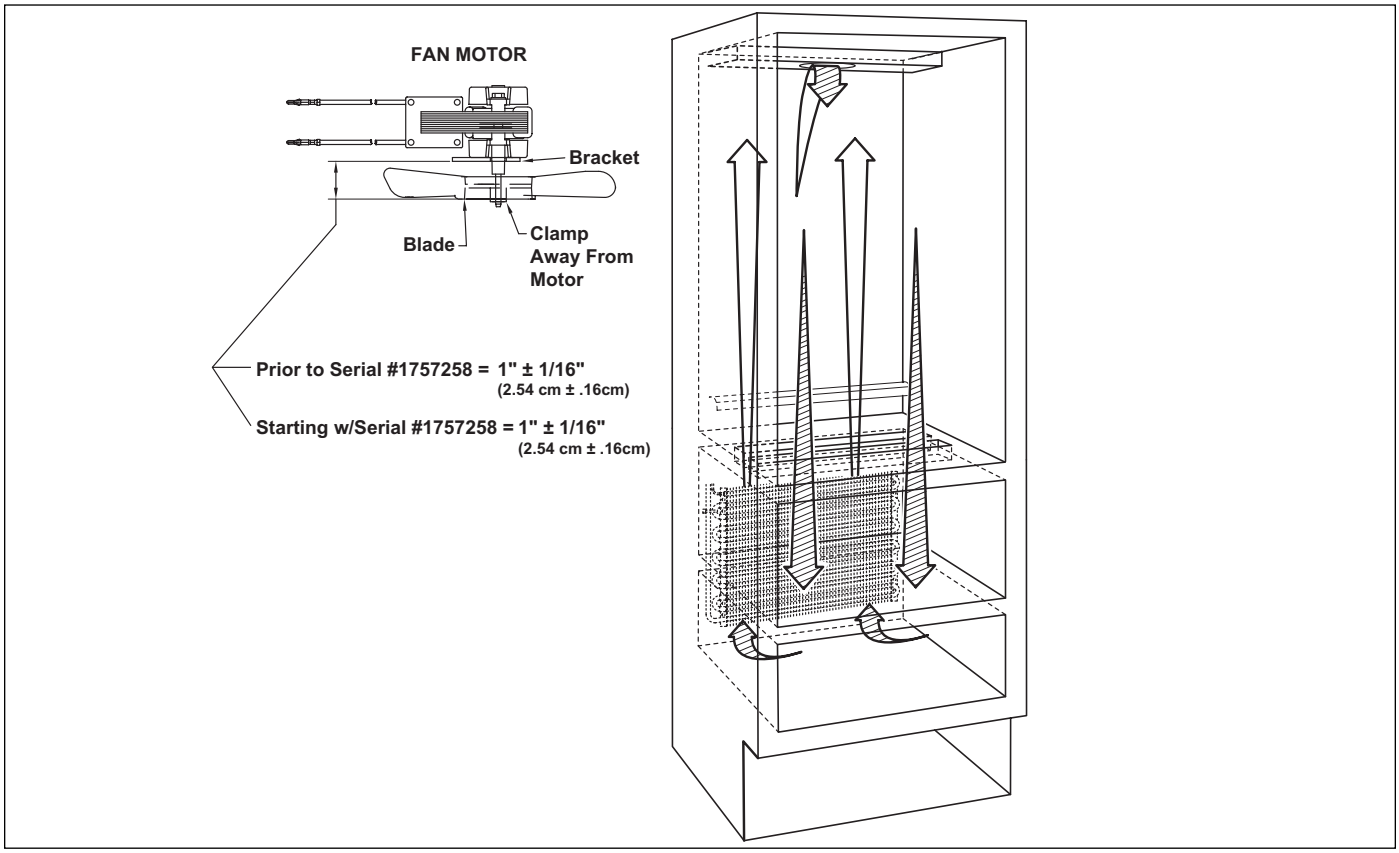


Figure 5-3. 700TF/I-2 and 700TF/I-2V Air Flow and Fan Blade Spacing

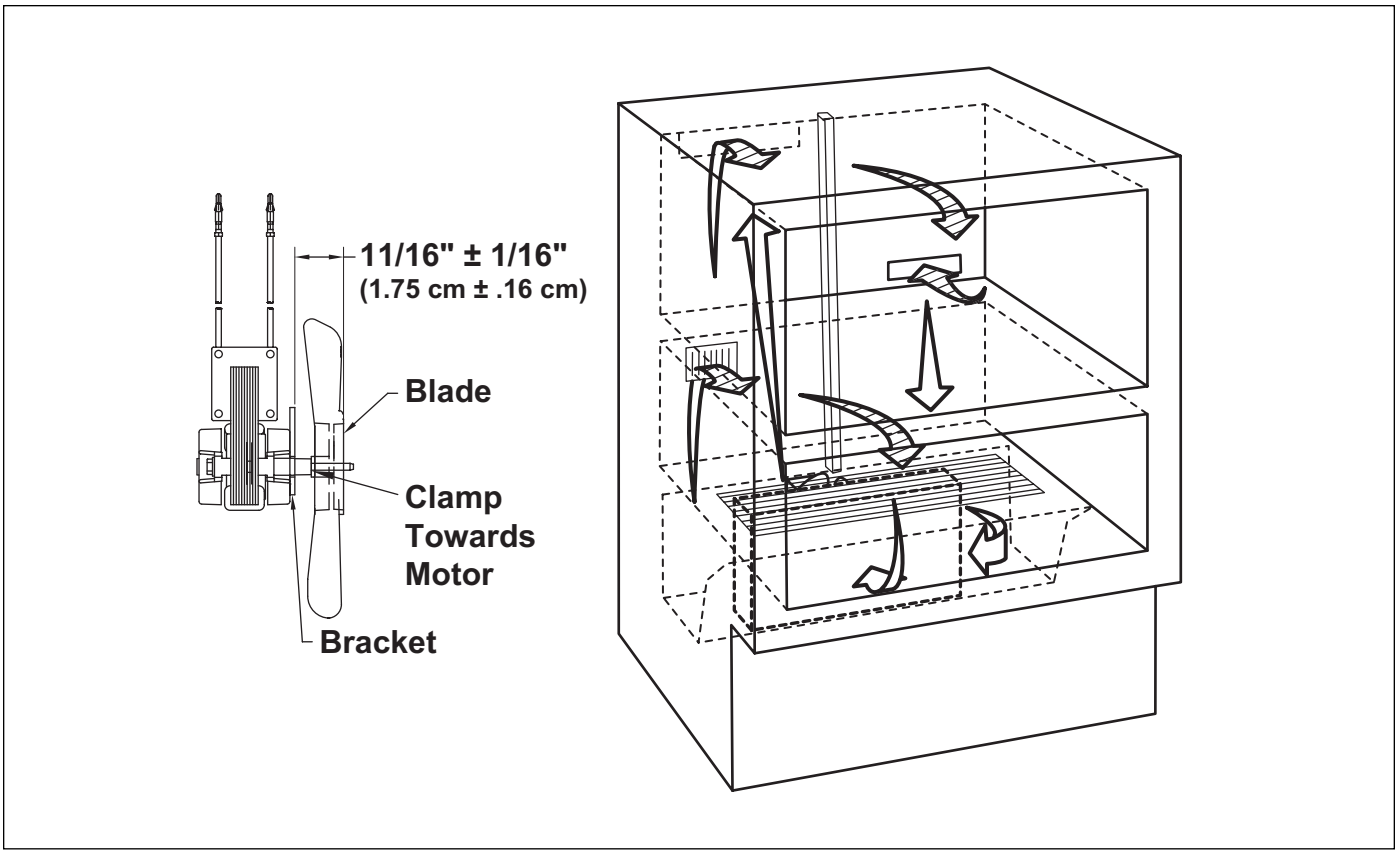


Figure 5-4. 700BR-2 Air Flow and Fan Blade Spacing

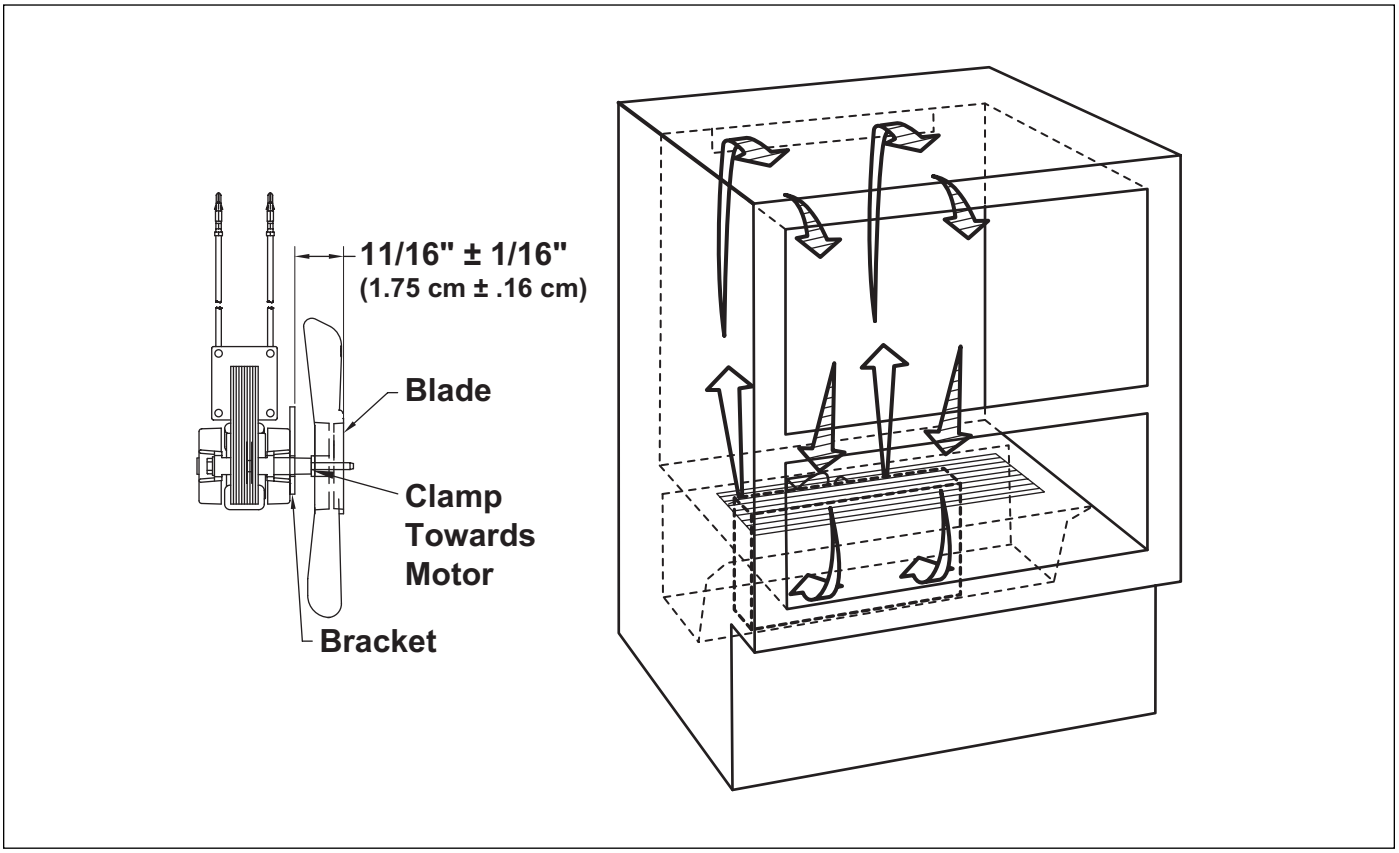


Figure 5-5. 700BF/I-2 Air Flow and Fan Blade Spacing

SECTION 6

ICEMAKER OPERATION

MODULAR ICEMAKER

All Integrated (700-2) Series units utilize a “modular icemaker”. The icemaker operation is not complex, however, an understanding of its cycle of operation is necessary in order for a serviceman to make a proper diagnosis.

Modular Icemaker Operation

When the icemaker thermostat has sensed temperatures of 17°F, the thermostat closes. At this time, the current now has a path through the thermostat to the motor. The motor is linked with the drive gear. From the module, there are copper contacts that ride on copper strips on the backside of the drive gear. (See Figure 6-1) As the drive gear rotates, these contacts from the module will make or break a circuit (track) to the copper strips to generate the icemaker cycle.

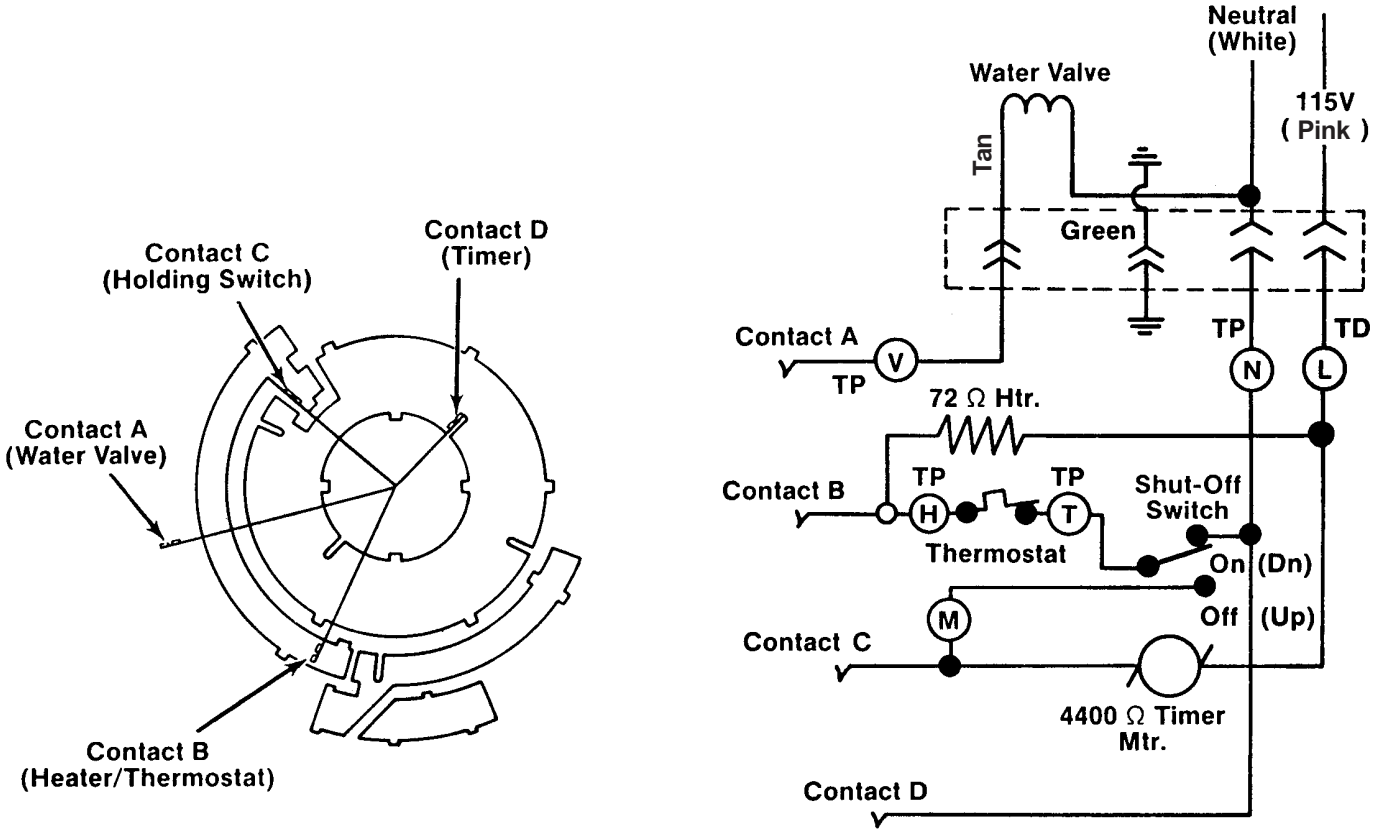


Figure 6-1. Modular Icemaker Electrical Schematic

Additional Icemaker Operation Notes

NOTE 1: *The ICE ON/OFF key at the control panel activates the icemaker system. If "ICE" is not displayed on the LCD, the icemaker system is OFF.*

NOTE 2: *To allow ice to freeze fully and reduce effects of low water pressure, the electronic control system disables the icemaker system for 45 minutes after each ice harvest* ***(this does not apply to the 700BFI-2)****. To bypass the 45 minute dwell, press the ICE key to switch the ice making system OFF, then press the ICE key again to cycle the ice making system back ON.*

NOTE 3: *The ice bucket activates a switch when in place. If the ice bucket is not in proper position, ice production will stop.*

NOTE 4: *The icemaker shut-off arm must be in the "down / on" position for the icemaker to operate.*

NOTE 5: *The icemaker relay on the control board also controls the fill tube heater and water valve.*

What Happens During Ejector Blade Rotation

Figure 6-2 represents a view of the ejector blade from the front (or module side) of the icemaker. This diagram indicates what happens during the rotation of the ejector blade and will assist the Service Technician in diagnosing icemaker problems

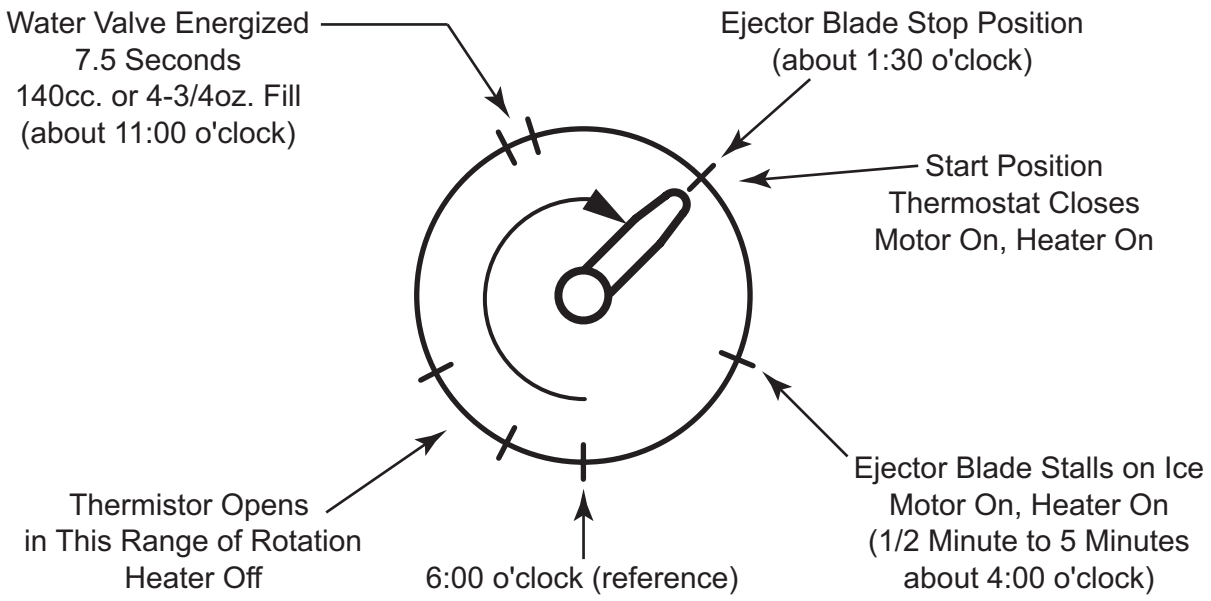


Figure 6-2. Ejector Blade Rotation Diagram

MODULAR ICEMAKER TEST PROCEDURES

Perform the following tests if the icemaker is thought to be defective. See Figure 6-3 for icemaker test port locations. Test 1 through 5 are performed with 115 Volts AC supplied to the icemaker, so read the "WARNING" below and the "additional Ice Production Notes" on the previous page before proceeding.

⚠ WARNING

ELECTRIC SHOCK HAZARD! TESTS 1 THROUGH 5 ARE PERFORMED WITH 115V AC SUPPLIED TO THE ICEMAKER. CARE MUST BE TAKEN WHEN PERFORMING THESE TESTS TO AVOID SEVERE PERSONAL INJURY OR DEATH.

Voltage Tests

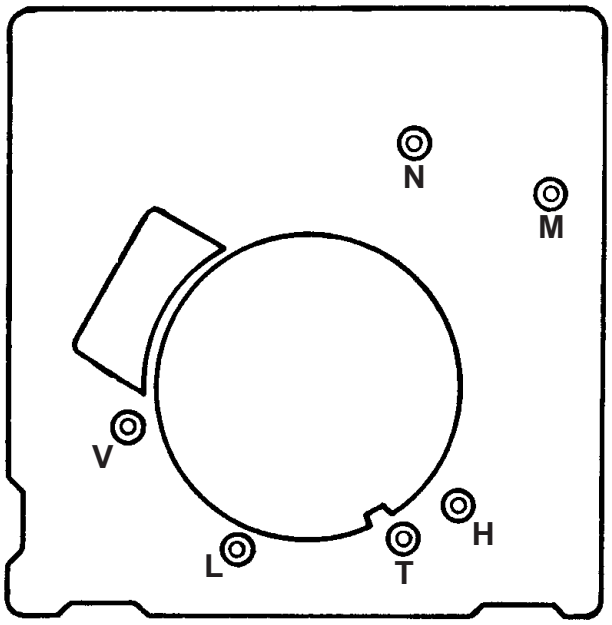
1. Check for 115 Volts AC between ports "L" and "N". Make sure test probes go into test ports 1/2".
2. Strip 1/2" of insulation from each end of a 3" piece of insulated 14 gauge wire to create a jumper/test wire. Insert the stripped ends of this jumper/test wire into ports "T" and "H" to bypass the thermostat.

   NOTE: *Do not place the jumper/test wire between any other ports as this will damage the icemaker.*

   If the motor doesn't run, replace the module/motor assembly.
3. Leave the jumper/test wire in until the ejector blades rotate to approximately 8:00 o'clock. The mold heater should heat up. If not, see test 5 below.
4. Remove the jumper/test wire when the ejector blades reach the 8:00 o'clock position. The water valve should energize for 7.5 seconds when the ejector blades rotate to approximately 11:00 o'clock. If not, repeat test 2 through 4 and check for 115V AC to solenoid when ejector blades rotate to approximately 11:00 o'clock. If no voltage, check electrical connections.

Continuity Tests and Thermostat Inspection

5. With icemaker removed from the unit, check the resistance of the mold heater between ports "L" and "H." Reading should be between 62 - 82 Ohms. Replace mold/heater assembly if outside this range.
6. With the module/motor separated from the mold/heater assembly, check the resistance of the motor between ports "L" and "M." Reading should be between 3390 - 4410 Ohms. Replace module/motor assembly if outside this range.
7. If icemaker passes tests 1 through 6, check for adequate supply of Thermal-Mastic on icemaker thermostat. If little or no Thermal-Mastic, apply Thermal-Mastic to thermostat. If adequate supply is present, replace thermostat.
8. See General Troubleshooting Guide if icemaker passes tests 1 through 7.



TEST PORTS

H-T ➔ Thermostat
L-H ➔ Heater
L-M ➔ Motor
L-N ➔ 115V AC
V-N ➔ Valve

Figure 6-3. Icemaker Test Ports

NOTE: *Never attempt to turn the icemaker ejector blades by hand. Doing so will damage the icemaker*

WATER FILL ADJUSTMENT

The water valve should energize for approximately 7.5 seconds. This should supply 140cc. of water to the icemaker, or approximately 4.75oz. If this is not the case, the fill amount can be adjusted with the water fill adjustment screw. (See Figure 6-4)

To increase the fill amount, turn the water fill adjustment screw counterclockwise. To decrease the fill amount, turn the water fill adjustment screw clockwise. A 360° turn will affect the fill by 40cc. A 180° turn will effect the fill by 20cc.

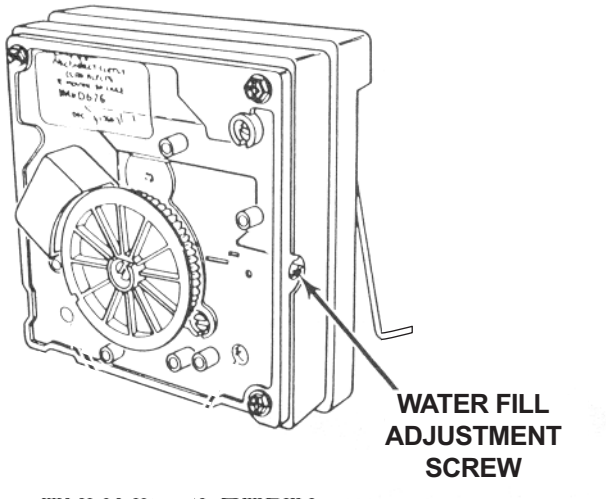


Figure 6-4. Water Fill Adjustment

ICEMAKER DISASSEMBLY

Module/Motor Assembly Removal

To remove the module/motor assembly, first remove the cover and the shut-off arm. Then, extract the module/motor assembly mounting screws and pull the module from the support. (See Figure 6-5)

Mold/Heater Assembly Removal

To remove the mold/heater assembly, first remove the cover and the shut-off arm. Insert a Phillips head screwdriver into the access holes and extract the screws. Then, pull the mold/heater assembly from the support. (See Figure 6-5)

Ejector Blades and/or Ice Stripper Removal

To remove the ejector blades and/or ice stripper, first remove the cover and the shut-off arm and disconnect the mold/heater assembly from the support. (See Figure 6-5) Then, pull the ejector blades and/or ice stripper from the mold.

Icemaker Thermostat Removal

To remove the icemaker thermostat, first remove the cover and the shut-off arm and disconnect the mold/heater assembly from the support. (See Figure 6-5) Then, use a needle-nose pliers to grasp one of the retaining clips and pull out. (See Figure 6-6)

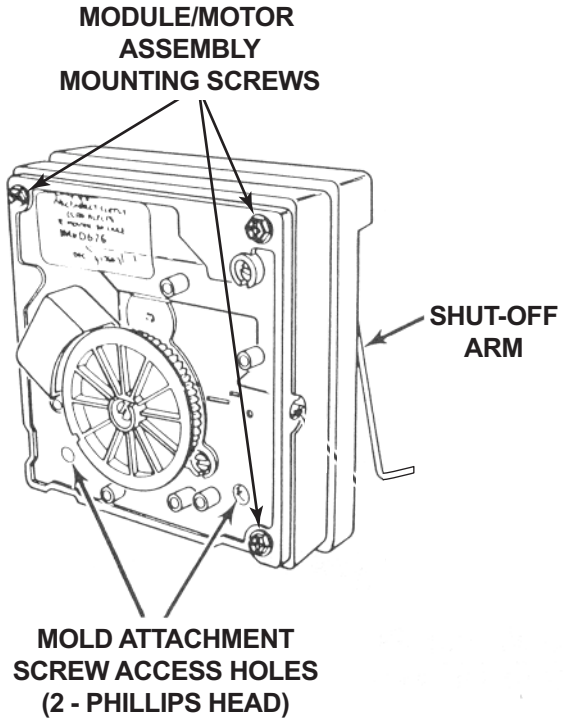


Figure 6-5. Icemaker Component Removal

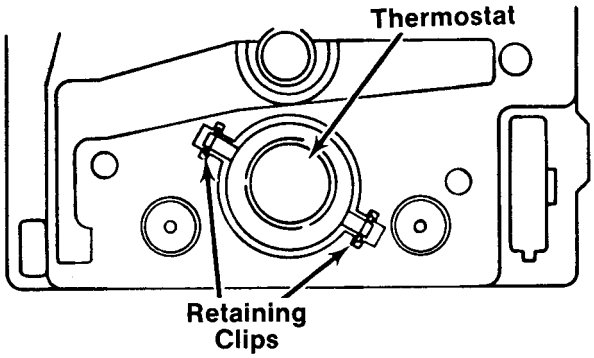


Figure 6-6. Thermostat Retaining Clips

SECTION 7

COMPONENT ACCESS AND REMOVAL

COMPONENT ACCESS AND REMOVAL

This section explains how to adjust, access and remove components from an Integrated (700-2) Series units.

There are two parts to this section. The first half pertains to the 700-2 tall units and the second half pertains to the 700-2 base units. If different models have similar adjusting, accessing and/or removal procedures, they are grouped together under the appropriate heading. The units covered in the procedures are listed between brackets after the heading. Both halves of this section are arranged as follows: Exterior cosmetic and mechanical components, followed by the internal cosmetic and mechanical components, unit tray mechanical components, with the sealed system components at the end of each half. An attempt has been made to arrange these procedures in such a way as to simulate which components would need to be removed first in order to gain access to other components. When following a component removal procedure, it may be necessary to reference another component removal procedure listed earlier in this section.

NOTE: *Before continuing, please take note of the WARNINGS and CAUTIONS below.*

⚠ WARNING

- **IF IT IS NECESSARY TO REMOVE A UNIT FROM ITS INSTALLATION, REMEMBER THAT THE UNIT COULD TIP FORWARD WHEN PULLED FORWARD BEYOND THE ANTI-TIP COMPONENTS, RESULTING IN SERIOUS INJURY OR DEATH. PULLING A UNIT FROM ITS INSTALLATION SHOULD ONLY BE PERFORMED BY AN AUTHORIZED SERVICE TECHNICIAN OR INSTALLER.**
- **TO AVOID ELECTRIC SHOCK, POWER TO THE UNIT MUST BE DISCONNECTED WHENEVER ACCESSING AND/OR REMOVING COMPONENTS POWERED BY ELECTRICITY OR COMPONENTS NEAR OTHER ELECTRICAL COMPONENTS. IF THE UNIT IS PLUGGED IN, BUT HAS NOT BEEN SWITCHED ON BY PRESSING THE UNIT ON/OFF KEY, 115 VOLTS AC IS STILL PRESENT AT THE CONTROL BOARD.**
- **IF REMOVING A DOOR OR DRAWER FROM A UNIT, REMEMBER THAT DOORS AND DRAWERS ARE HEAVY. IF THEY WERE TO FALL, THEY COULD CAUSE SERIOUS PERSONAL INJURY.**

⚠ CAUTION

- **If removing or disconnecting door hinge assemblies, remember they are spring loaded and may recoil quickly when released.**
- **If working in the compressor area, remember that compressor and tubing may be hot.**
- **If working on or around the evaporator or condenser, remember that evaporator and condenser fins are sharp.**

700-2 TALL UNIT EXTERIOR COSMETIC AND MECHANICAL COMPONENTS

Kickplate/Grille Removal (All Tall Units)

The kickplate/grille is attached by four screws passing through the kickplate into adjustable kickplate brackets.

NOTE: *Because drawer panels may extend down in front of the kickplate/grille, it may be necessary to remove the bottom drawer to gain access.*

To remove the kickplate/grille, extract the four screws (two on each side) and pull the kickplate grille forward. (See Figure 7-1)

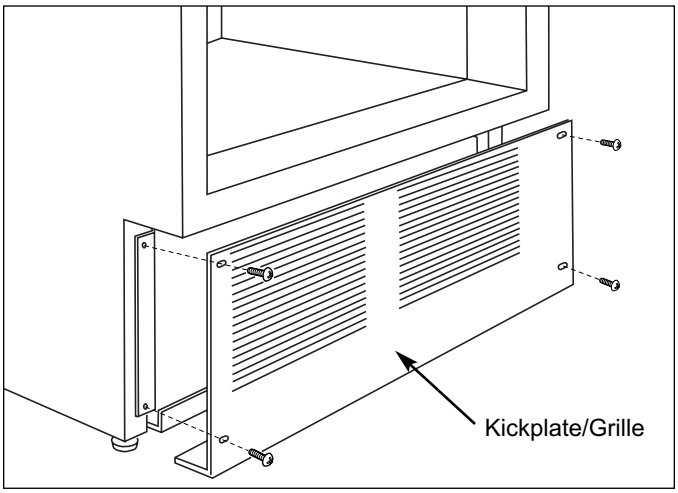


Figure 7-1. Kickplate/Grille Removal

Side Trim Molding Strip Removal (All Tall Units)

The side trim molding strips are held in place by four unit-to-cabinet brackets that are attached to the sides of the cabinet.

NOTE: *Removing the drawers first will make this task easier.*

To remove the side trim molding strips, place a straight-blade screwdriver in the channel at the bottom of the molding. (See Figure 7-2) Gently pull the molding forward until the face-frame edge of the molding is accessible. Place another straight-blade screwdriver under the face-frame edge and gently work the molding away from the face-frame and out of the four unit-to-cabinet brackets. (See Figure 7-2)

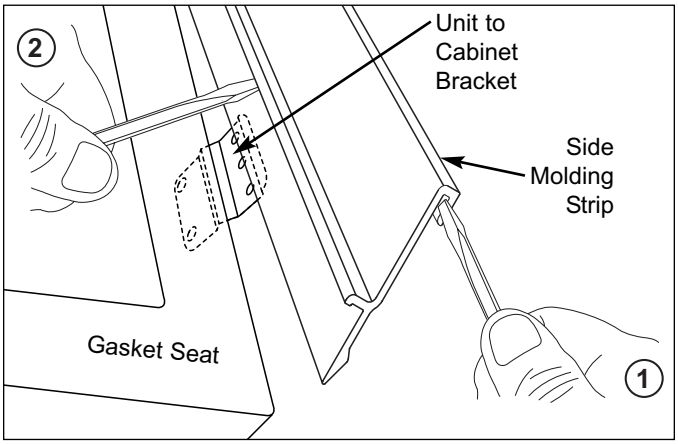


Figure 7-2. Side Molding Strip Removal

Upper Door Compartment Light Switch & Fan Switch Removal (All Tall Units)

The upper door compartment light switch and fan switch protrude through the top trim molding, just above the door. Tabs on the switches hold the switches in the switch bracket behind the top trim, and the bracket is attached to the switch enclosure with two screws.

NOTE: *The switch with the white back is for the lights and the switch with the black back is for the evaporator fan.*

To access and remove a light and/or fan switch, First remove the the side molding strips. Then, pull the top of the top molding forward, then lift up. Remove the two screws from the switch bracket and pull the bracket forward. (See Figure 7-3) Disconnect the electrical leads from the switch being removed. Depress the tabs on the side of the switch and push the switch out of the bracket.

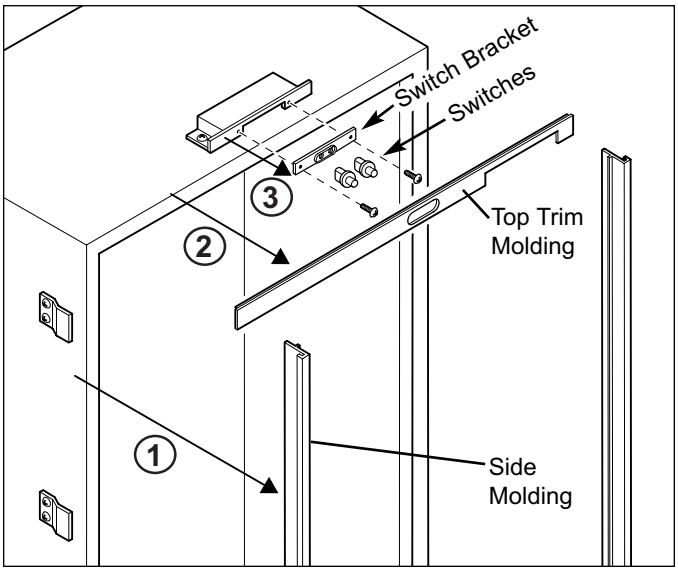


Figure 7-3. Upper Light Switch & Fan Switch

Drawer Assembly Removal (All Tall Units)

There are inverted channels on both sides of the drawer tubs which rest on telescoping drawer slide assemblies. A pin at the front of each drawer slide fits into a hole in the inverted channel of each drawer tub, holding the drawer assembly in place. (See Figure 7-4)

To remove a drawer assembly, pull the drawer open and lift the front of the drawer up and off of the pins at the end of the drawer slides. Pull the drawer assembly forward and out. Then, push the telescoping drawer slide assemblies back in.

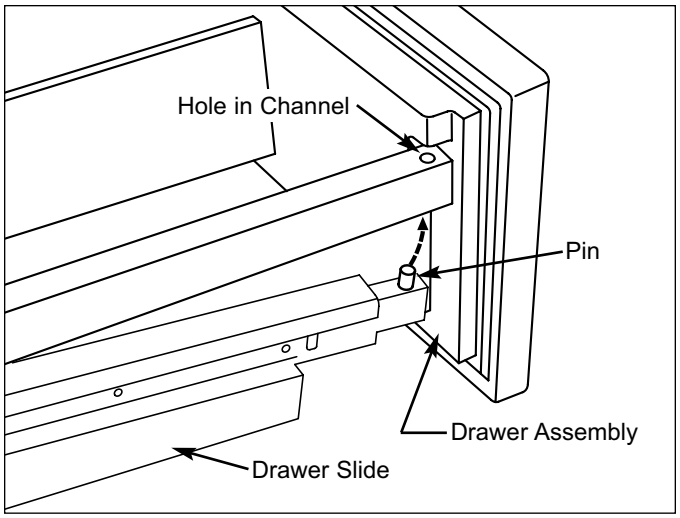


Figure 7-4. Drawer Assembly Removal

Door & Drawer Gasket Removal (All Tall Units)

The door and drawer gaskets are pressed into retaining channels that are molded into the door and drawer liners.

NOTE: *Drawer assemblies must be removed from the unit in order to remove and/or install their gaskets.*

To remove a door or drawer gasket, simply pull the gasket from the retaining channel. (See Figure 7-5)

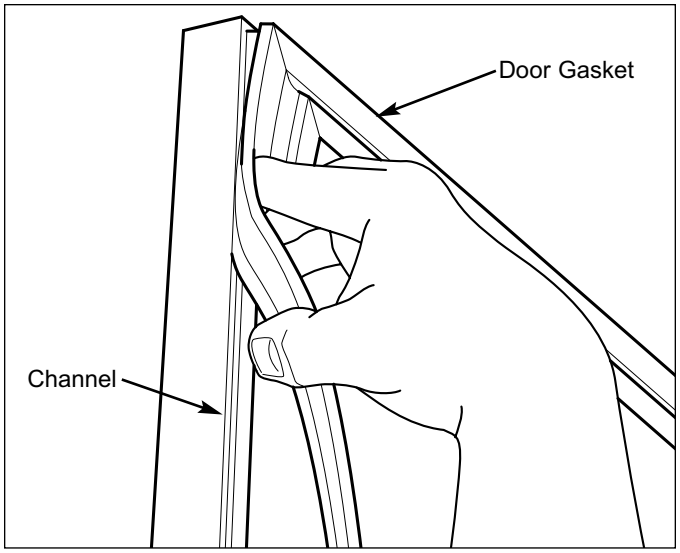


Figure 7-5. Gasket Removal

Door Assembly Removal (All Tall Units)

The door assembly is held in place with Allen-head screws that pass down through the arm of the top hinge assembly and up through the arm of the bottom hinge assembly into the door. These mounting screws are concealed by a hinge cover on each hinge arm. The hinge covers are held in place by tabs that fit into notches in the hinge arms.

NOTE: *Removing the top drawer first will make this task easier.*

To remove a door assembly, begin by opening the door and removing both hinge covers. With an Allen-head wrench, extract the two inner-most door mounting screws from the top and bottom hinge arms, leaving the two outer-most screws in place. Now, close the door and remove the outer-most door mounting screws from the bottom hinge arm, then remove the two outer-most door mounting screws from the top hinge arm, and lift the door from the unit. (See Figure 7-6)

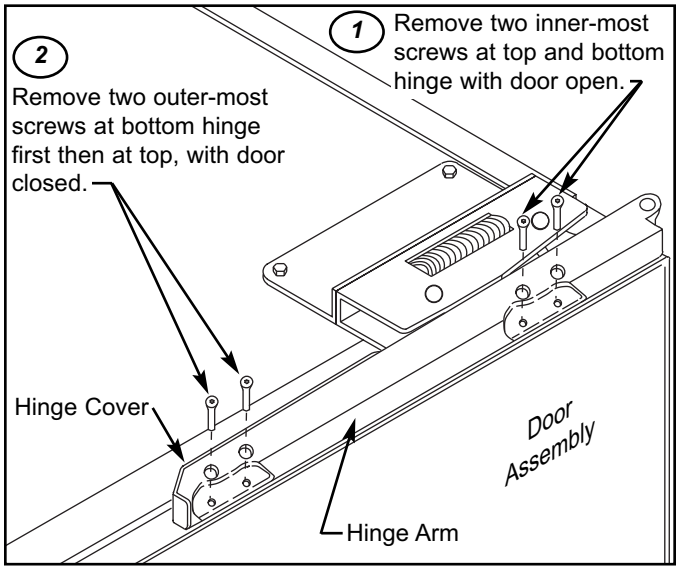

1
Remove two inner-most screws at top and bottom hinge with door open.
2
Remove two outer-most screws at bottom hinge first then at top, with door closed.
Hinge Cover
Door Assembly
Hinge Arm

Figure 7-6. Door Assembly Removal

Upper and Lower Hinge Assembly Removal (All Tall Units)

The hinge assemblies are attached to hinge mounting brackets with Allen-head bolts.

To remove a hinge assembly, you will need to remove the door assembly first. Then, extract the Allen-head bolts from the appropriate hinge mounting bracket and pull the hinge assembly from the unit. (See Figure 7-7)

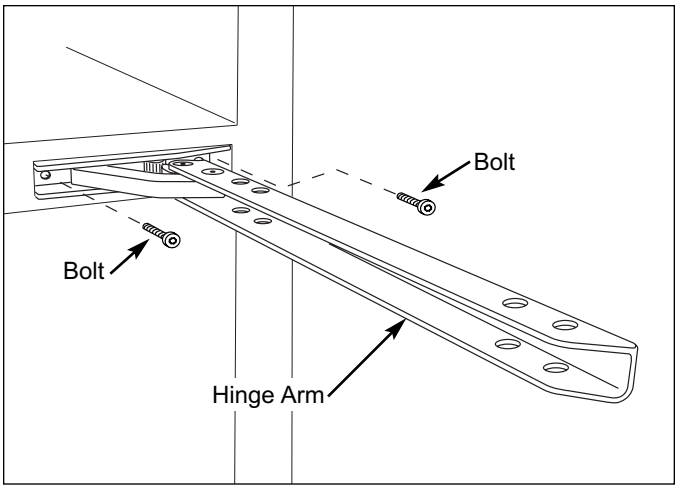


Figure 7-7. Hinge Assembly Removal

700-2 TALL UNIT INTERIOR COSMETIC, MECHANICAL AND ELECTRICAL COMPONENTS

Door Shelf and Dairy Compartment Adjustment / Removal (All Tall Units)

There are “L” shaped grooves in the end caps of the door shelves and dairy compartment, and there are knobs formed in the dikes of the door liner. (See Figure 7-8) The door shelves and the dairy compartment are hung on the door by lining up the “L” shaped grooves with the knobs.

Push in and down to install a door shelf. Pull up and out to remove a door shelf.

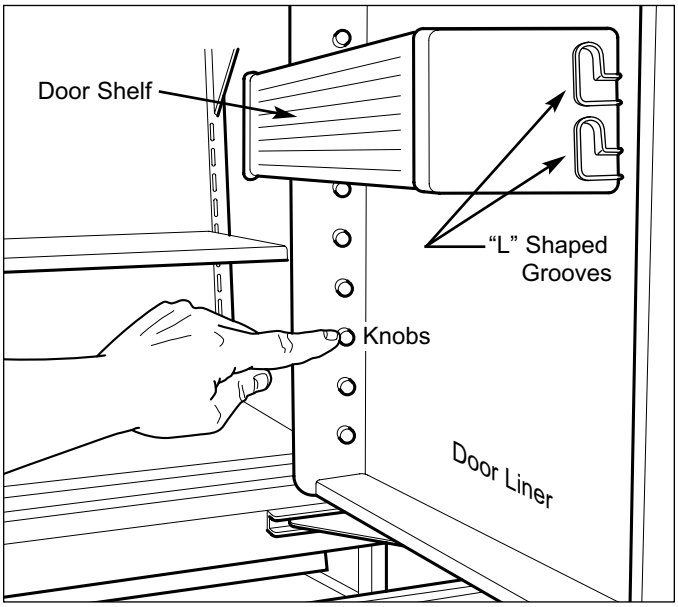


Figure 7-8. Door Shelf

Compartment Shelf Adjustment / Removal (All Tall Units)

Compartment shelf side rails have hooks at the back that allow the shelves to be hung from the shelf ladders.

To remove a compartment shelf, tilt the front of the shelf up, then lift the back of the shelf up to disengage the hooks from the shelf ladders and pull the shelf from the unit. (See Figure 7-9.)

To reinstall a compartment shelf, tilt the front of the shelf up and align the hooks with the slots the in shelf ladders, then insert the hooks into slots and lower the front of the shelf.

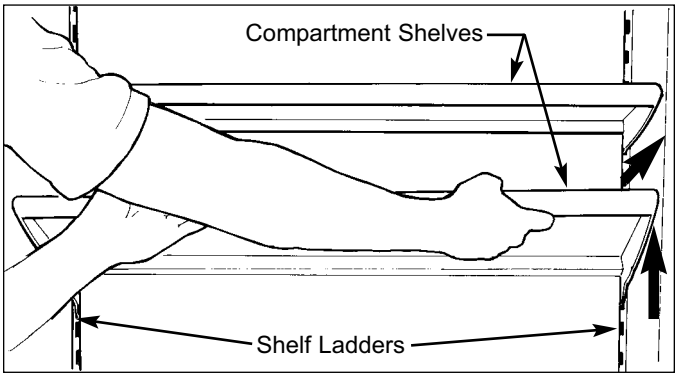


Figure 7-9. Compartment Shelf Removal

Upper Light Diffuser Removal (All Tall Units)

The side frames of the upper light diffuser have four inverted "T" shaped slots (two each side) which fit over pegs protruding from the side walls of the upper compartment. Retaining clips at the rear slots secure the diffuser to the rear pegs.

To remove the light diffuser, slide a finger over the top of each retainer clip flange and rotate the retainer clip down and back. (See Figure 7-8) With the clips open, lift the diffuser up and slide it towards the rear of the unit until the center of the "T" slots line up with the pegs. Then lower the diffuser down and pull forward from the unit. (See Figure 7-9)

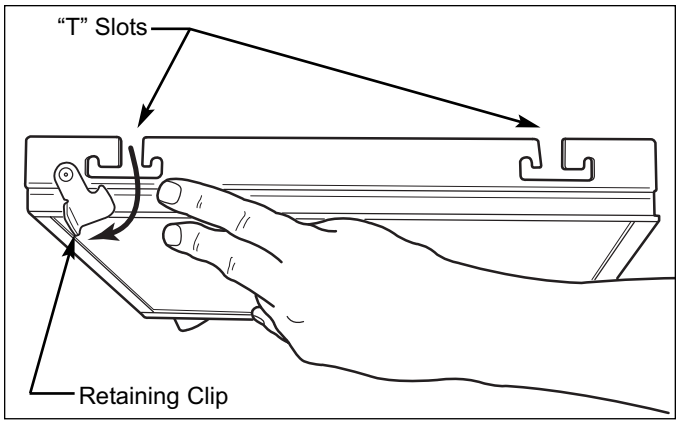


Figure 7-8. Upper Light Diffuser Removal

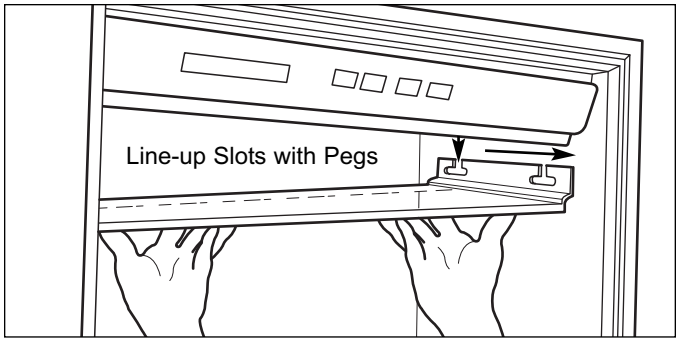


Figure 7-9. Upper Light Diffuser Removal

Light Bulb Removal (All Tall Units)

To access the upper light bulbs, the light diffuser must be removed first. With the diffuser removed, screw the bulb counterclockwise to remove it and clockwise to install it. (See Figure 7-10)

The light bulbs in the drawer area are not covered by light diffusers. Screw the bulb counterclockwise to remove and clockwise to install. (See Figure 7-10)

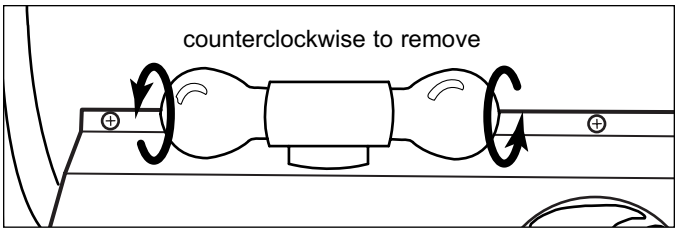


Figure 7-10. Light Bulb Removal

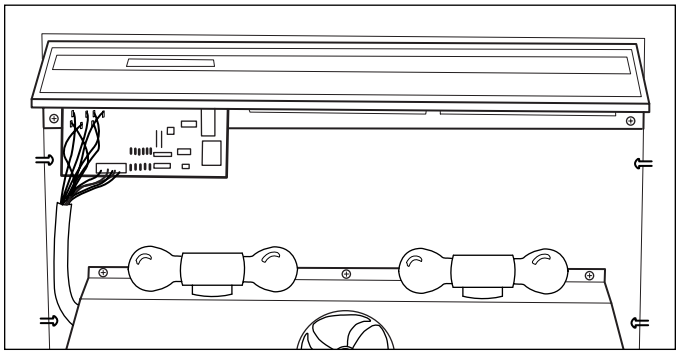


Figure 7-11. Control Board And Control Panel

Control Board Removal (All Tall Units)

The control board is held in position by two sets of tabs behind the left side of the control panel. The two forward tabs position the LCD in the control panel window, while the other two tabs secure the middle of the control board. The control board is then shielded by a control enclosure and concealed by the light diffuser.

To access and remove the control board, first remove the light diffuser. Then, extract the screws securing the control enclosure to the ceiling of the compartment. Lower the back of the enclosure while pulling it toward the rear of the unit. Disconnect all electrical leads attached to the control board. Expand the two tabs at the middle of the control board outward while pulling the back of the board down slightly. Then, expand the two forward tabs outward that hold the LCD in position, and pull the control board down and toward the rear of the unit.(See Figures 7-11 & 7-12.)

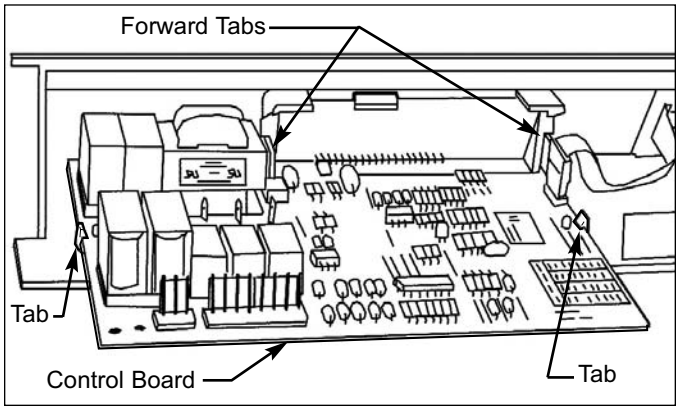


Figure 7-12. Control Board Removal

Control Panel Assembly Removal (All Tall Units)

The control panel is held in place with two rows of screws. The front row of screws go through spacers that fit into key-hole slots at the front of the panel. The rear screws secure the assembly to the ceiling.

To access and remove the control panel, the light diffuser and control enclosure must be removed first.

NOTE: *It is recommended but not necessary to remove the control board in order to remove the control panel. If leaving the control board secured to the control panel, all electrical leads attached to the control board must be disconnected.*

Then, extract the back screws and push the panel towards the rear of the unit to release the front screws from the key-hole slots, then lower the panel down and pull out. (See Figure 7-13)

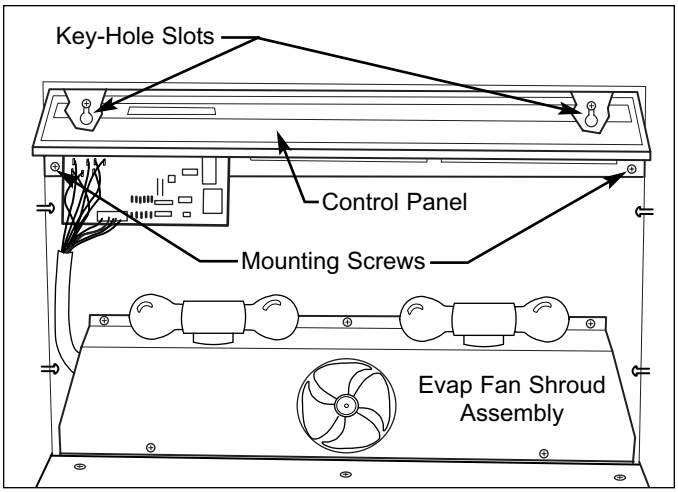


Figure 7-13. Control Panel Removal

Upper Evaporator Cover / Air Duct Removal (All Tall Units)

The bottom of the upper evaporator cover sets into a channel at the bottom of the upper compartment. At the top, screws hold the evaporator cover to the evaporator fan shroud.

To access and remove the evaporator cover, the light diffuser must first be removed. Then, extract the screws at the top of the evaporator cover, tilt the cover forward and lift out. (See Figure 7-14)

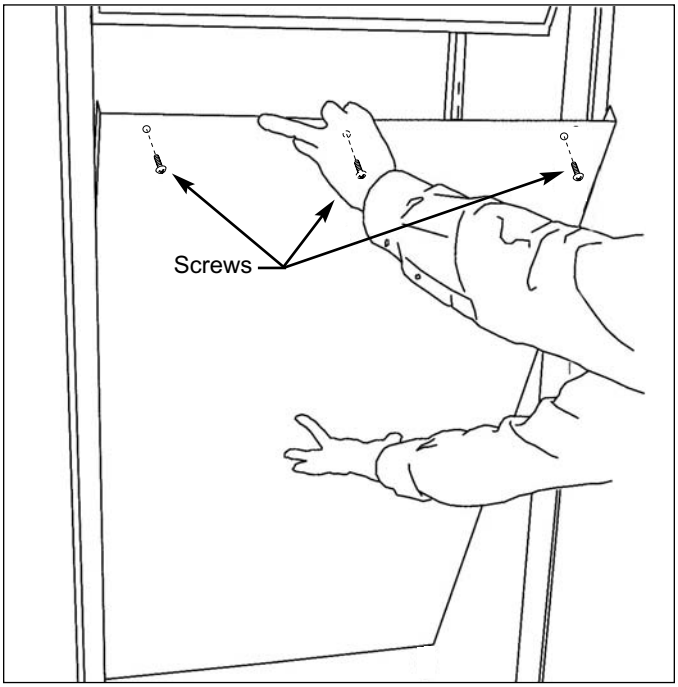


Figure 7-14. Upper Evaporator Cover Removal

Upper Evaporator Fan Shroud Assembly Removal (All Tall Units)

The evaporator fan shroud assembly, which holds the upper compartment lighting components, is secured to the ceiling with five screws, two at the rear and three at the front. (See Figure 7-13)

To access and remove the evaporator fan shroud assembly, first remove the light diffuser and evaporator cover. Then, extract the five mounting screws which secure the fan shroud assembly to the ceiling of the compartment. Lower the assembly and disconnect the wiring for the lights from the wire harness. (See Figure 7-15)

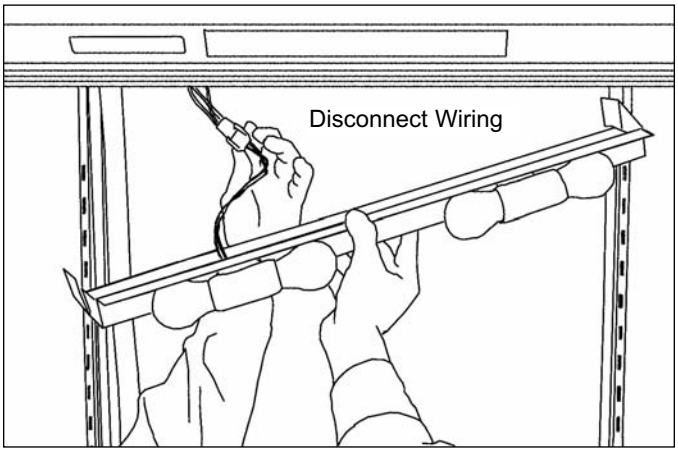


Figure 7-15. Upper Evaporator Fan Shroud Assy

Upper Compartment Evaporator Fan Assembly Removal (All Tall Units)

The upper evaporator fan assembly sets in a pocket in the ceiling of the upper compartment and is secured to the ceiling with screws.

To access and remove the evaporator fan assembly, first remove the light diffuser, evaporator cover, and evaporator fan shroud assembly. Then, disconnect the fan motor wire leads from the wire harness, and extract the mounting screws. (See Figure 7-16)

The evaporator fan blade is pressed onto the shaft of the fan motor and can be removed by simply pulling it away from the motor.

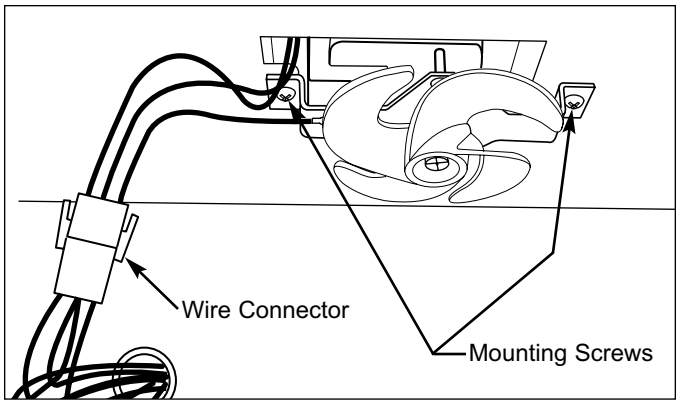


Figure 7-16. Upper Evap Fan Assy

Upper Compartment Thermistor Removal (All Tall Units)

The upper compartment thermistor is located behind the evaporator cover, and is attached to the back wall with a screw.

To access and remove the upper compartment thermistor, first remove the light diffuser and evaporator cover. Then, disconnect the thermistor wire leads from the wire harness, and extract the screw which secures the thermistor to the rear wall. (See Figure 7-17)

Upper Evaporator Thermistor Removal (700TC/I-2, 700TR-2)

NOTE: *There is no evaporator or evaporator thermistor in the upper compartment of the 700TF/I-2 and 700TFI-2V.*

The upper evaporator thermistor is attached to the right side bracket of the evaporator with a screw.

To access and remove the upper evaporator thermistor, first remove the light diffuser and evaporator cover. Then, disconnect the thermistor wire leads from the wire harness, and extract the screw which secures the thermistor to the right evaporator bracket. (See Figure 7-17)

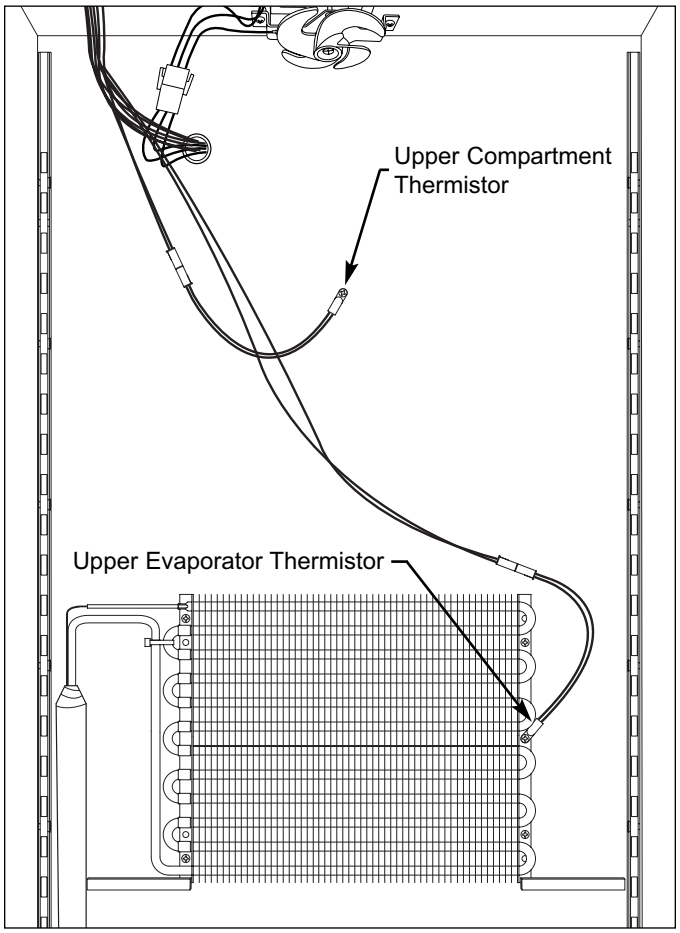


Figure 7-17. Upper Compartment and Evaporator Thermistors

Drawer Closer Assembly Removal (All Tall Units)

The drawer closer assemblies are located on the right side wall, towards the front of the two drawer areas. Two screws secure each drawer closer to the wall.

To access and remove a drawer closer assembly, first remove the appropriate drawer. Then, extract the two screws that secure the drawer closer to the wall. (See Figure 7-18)

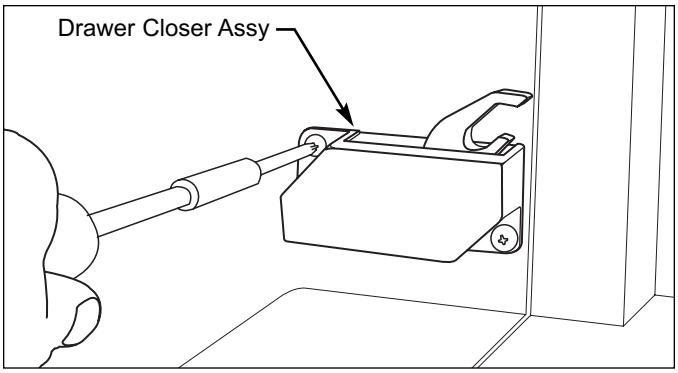


Figure 7-18. Drawer Closer Assembly Removal

Drawer Slide Assembly Removal (All Units)

There are four drawer slide assemblies in 700-2 Series units, two on each side wall. The drawer slide assemblies are attached to the side walls with Allen-head screws passing through the drawer slide bracket into blind threaded inserts.

To access and remove a drawer slide assembly, first remove the drawer. Then, extract the drawer slide mounting screws with a 5/32" Allen-head wrench, and pull the drawer slide assembly away from the wall. (See Figure 7-19)

NOTE: *The pins at the end of the drawer slides are replaceable. Screw the pins counterclockwise to remove them. (See Figure 7-20)*

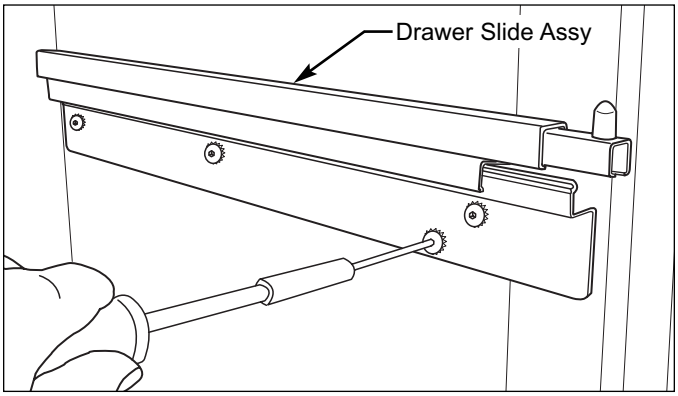


Figure 7-19. Drawer Slide Assembly Removal

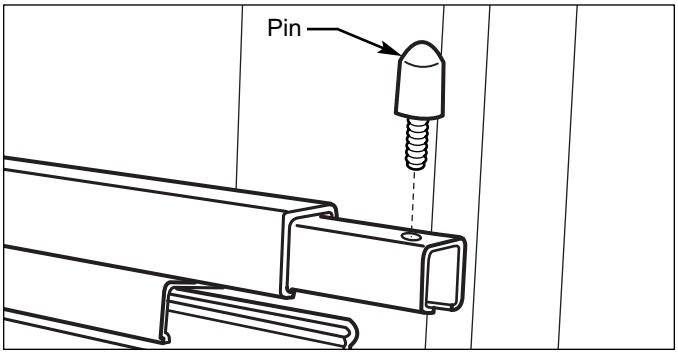


Figure 7-20. Pin Replacement

Icemaker Assembly Removal (700TCI-2, 700TFI-2, 700TFI-2V)

The icemaker is attached to a support plate with three screws that pass up through the plate into the bottom of the icemaker. The ice level arm is also attached to the support plate using two P-clamps and two screws. The P-clamps fit around rods at the back of the ice level arm. Screws passing through the P-clamps secure them to the support plate at the rear. At the front, a connecting rod is used to attach the ice level arm to the icemaker shut-off arm. This whole assembly is attached to the evaporator cover with three mounting screws, two at the top and one at the bottom. (See Figure 7-21)

To access and remove the icemaker assembly, first remove the bottom drawer. Then, extract the bottom icemaker mounting screw and the two top mounting screws. (See Figure 7-21) Lower the icemaker assembly down and disconnect the wire harness from the back left of the icemaker.

The icemaker can now be removed from the support plate by first sliding the connecting rod off of the shut-off arm, then extracting the three screws from the bottom of the icemaker.

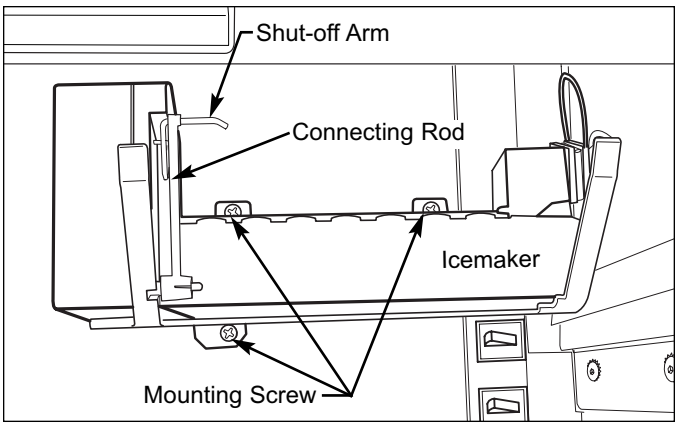


Figure 7-21. Icemaker Assy, TCI-2, TFI-2, TFI-2V

Heat Exchanger Cover Removal (All Tall Units)

The heat exchanger cover is held in the back left corner of the lower compartment with two screws that go through the cover and into stand-offs. (See Figure 7-22)

To access and remove the heat exchanger cover, the two drawers will need to be removed first. Then, extract the two mounting screws and pull the cover from the unit.

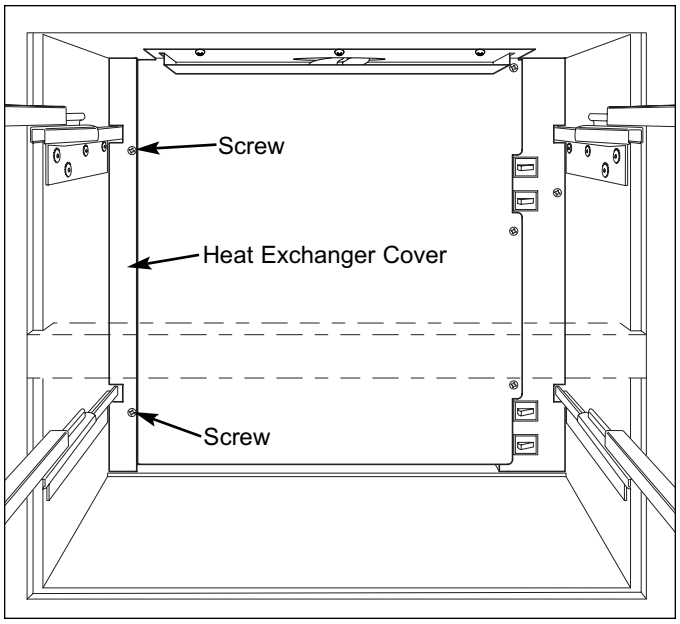


Figure 7-22. Heat Exchanger Cover Removal

Lower Evaporator Cover Assembly Removal (700TR-2 Only)

NOTE: *The evaporator fan assembly is attached to the lower evaporator cover assembly in the 700TR-2.*

The lower evaporator cover assembly in the 700TR-2 is held in place with eight screws. Two screws on the left side are hidden by the heat-exchanger cover. Three screws on the right side secure the evaporator cover assembly to the switch enclosure and three screws at the top secure it to the ceiling of the lower compartment. (See Figure 7-23)

To access and remove the lower evaporator cover assembly, first remove the two drawers and the heat exchanger cover. Then, remove the two screws that were hidden by the heat exchanger cover. Extract the three screws at the top and the three screws on the right side. Pull the right top front of the evaporator cover assembly down slightly and disconnect the evaporator fan electrical leads. Now, pull the assembly through the upper drawer opening.

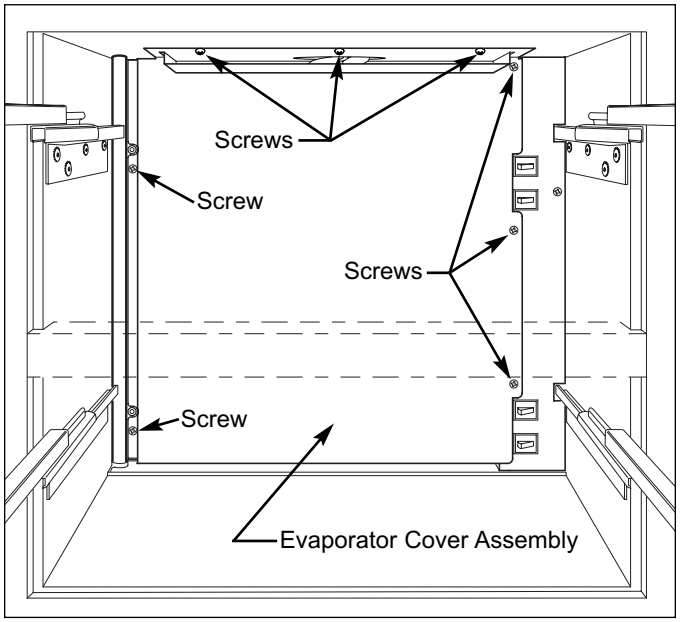


Figure 7-23. Evaporator Cover Assy Removal, TR-2

Lower Evaporator Fan Assembly Removal (700TR-2 Only)

NOTE: *The evaporator fan assembly is attached to the lower evaporator cover assembly in the 700TR-2.*

The lower evaporator fan assembly in the 700TR-2 is held in place by two bolts passing through access holes in the evaporator fan shroud, then through the top flange of the evaporator cover and into well-nuts in the evaporator fan bracket.

To access and remove the lower evaporator fan assembly, first remove the two drawers, the heat exchanger cover and the lower evaporator cover assembly. Then, extract the two bolts from the well-nuts, through the access holes. (See Figure 7-24)

The evaporator fan blade is pressed onto the shaft of the fan motor and can be removed by simply pulling it away from the motor.

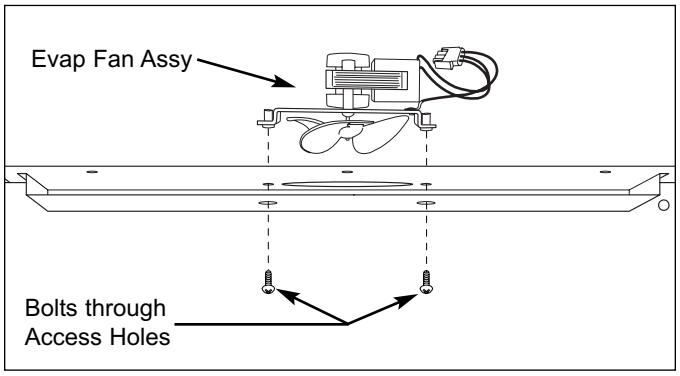


Figure 7-24. Evaporator Fan Assy Removal, TR-2

Lower Compartment Thermistor Removal (700TR-2 Only)

NOTE: *The lower compartment thermistor in the 700TC/I-2 is attached inside the switch enclosure which is explained later in this section.*

The lower compartment thermistor in the model 700TR-2 is located behind the evaporator cover, and is attached to the back wall with a screw.

To access and remove the lower compartment thermistor, first remove the two drawers, the heat exchanger cover and the lower evaporator cover assembly. Then, disconnect the thermistor wire leads from the wire harness, and extract the screw which secures the thermistor to the rear wall. (See Figure 7-25)

Lower Evaporator Thermistor Removal (700TR-2 Only)

NOTE: *The lower evaporator thermistor in the 700TC/I-2, 700TF/I-2 and 700TFI-2V is attached to the top right side of the evaporator which is explained later in this section.*

The lower evaporator thermistor in the 700TR-2 is attached to the right evaporator bracket with a screw.

To access and remove the lower evaporator thermistor, first remove the two drawers, the heat exchanger cover and the lower evaporator cover assembly. Then, disconnect the thermistor electrical leads and extract the screw securing the thermistor to the right evaporator bracket. (See Figure 7-25)

Lower Evaporator Cover Assembly Removal (700TC/I-2, 700TF/I-2, 700TF/I-2V)

The lower evaporator cover in the 700TC/I-2, 700TF/I-2 and 700TF/I-2V is held in place with four screws and one peg. Two screws on the left side are hidden by the heat-exchanger cover; two screws at the top secure the evaporator cover to the ceiling of the lower compartment; and a peg protruding from the bottom left side of the switch enclosure fits into a hole in the bottom right side of the evaporator cover. (See Figure 7-26)

To access and remove the lower evaporator cover, first remove the two drawers and the heat exchanger cover, as well as the icemaker in applicable models. Then, remove the two screws that were hidden by the heat exchanger cover. Extract the two screws at the top and pull the evaporator cover to the left to disengage the peg from the hole at the bottom right. Now, pull the assembly through the upper drawer opening.

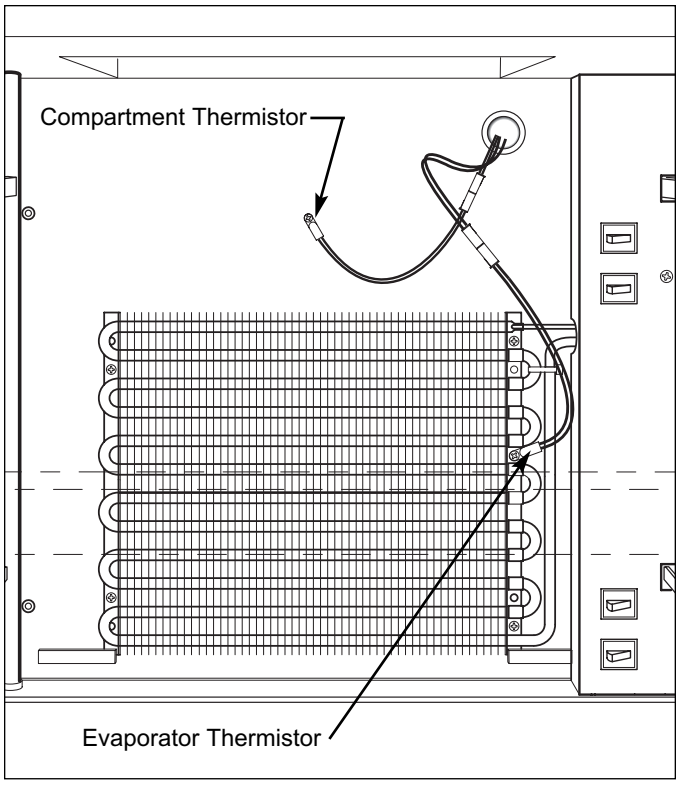


Figure 7-25. Lower Thermistors, TR-2

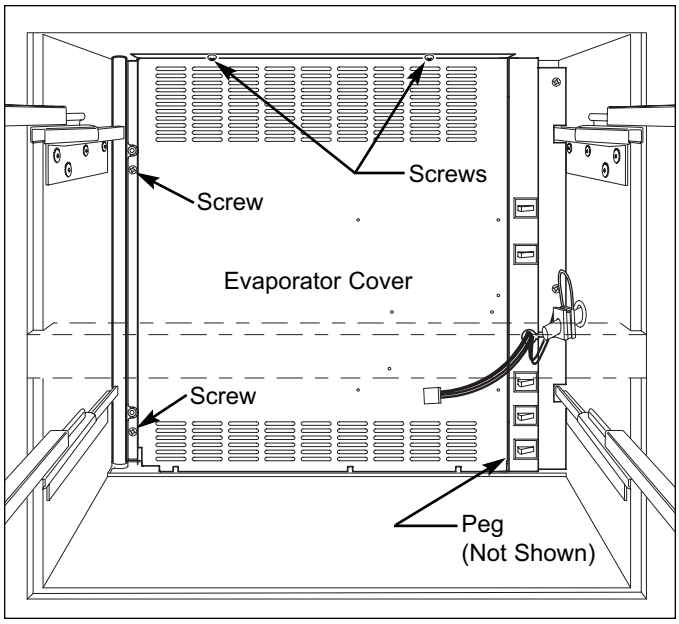


Figure 7-26.
Evap Cover Removal, TC/I-2, TF/I-2 & TF/I-2V

Drain Trough Heater Removal (700TC/I-2, 700TF/I-2, 700TF/I-2V)

The drain trough heater in the lower compartment of the 700TC/I-2, 700TF/I-2 and 700TFI-2V is positioned just above the drain trough and held in place by three heater brackets.

To access and remove the drain trough heater, first remove the two drawers, the heat exchanger cover and the the evaporator cover. Then, pull the heater up from the notches in the two side brackets, and down from the notches in the middle bracket. Pull the heater to the left until the electrical connections come out from behind the switch enclosure, then disconnect the electrical leads. (See Figure 7-27)

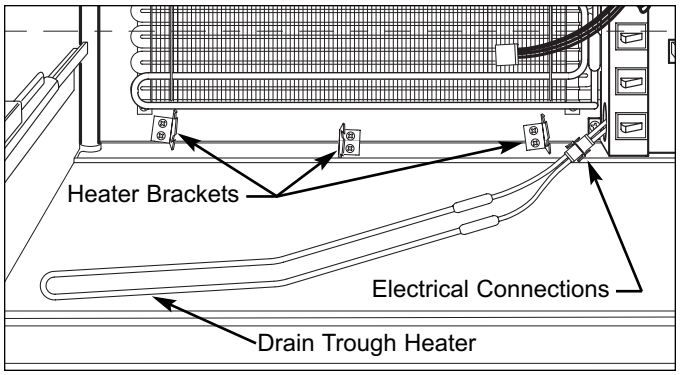


Figure 7-27. Drain Trough Htr, TC/I-2, TF/I-2, TC/I-2V

Lower Evaporator Fan Shroud Removal (700TC/I-2)

The lower evaporator fan shroud in the 700TC/I-2 is attached to the front flanges of the evaporator fan bracket assembly with two screws.

To access and remove the lower evaporator fan shroud, first remove the two drawers, the heat exchanger cover and the evaporator cover. Then, extract the two screws that pass through the fan shroud into the evaporator fan bracket. (See Figure 7-28)

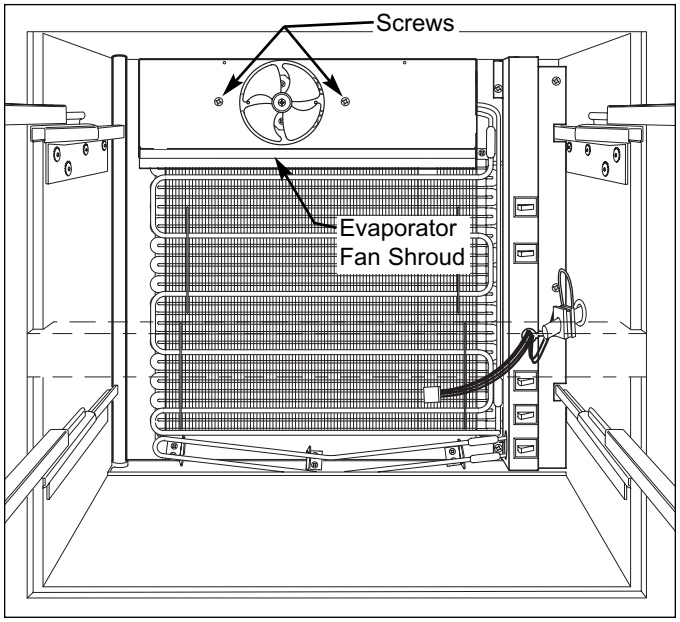


Figure 7-28. Evap Fan Shroud, TC/I-2

Lower Evaporator Fan Assembly Removal (700TC/I-2)

The lower evaporator fan assembly in the 700TC/I-2 is attached to the upper back wall of the lower compartment with two screws.

To access and remove the lower evaporator fan assembly, first remove the two drawers, the heat exchanger cover, the evaporator cover and the evaporator fan shroud. Then, reach through the access holes in the fan bracket assembly and extract the two screws that secure the assembly to the back wall. (See Figure 7-29)

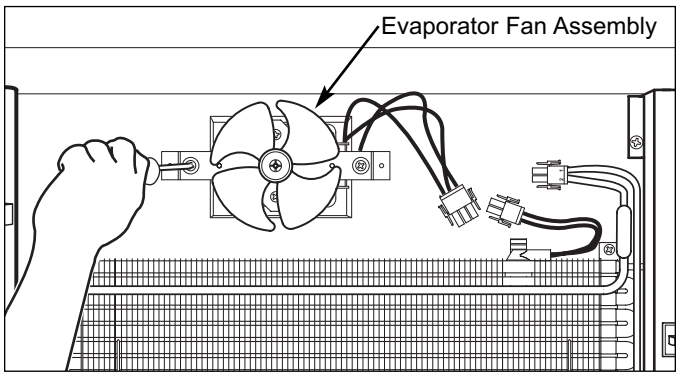


Figure 7-29. Fan Assy Removal, TC/I-2

Defrost Terminator Removal (700TC/I-2, 700TF/I-2, 700TF/I-2V)

The defrost terminator in the 700TC/I-2, 700TF/I-2 and 700TFI-2V is attached to the second tubing pass from the top of the evaporator.

To access and remove the defrost terminator, first remove the two drawers, the heat exchanger cover, the evaporator cover and the evaporator fan shroud. Then, remove the screws at the top of the evaporator and pull the top of the evaporator forward slightly. Disconnect the defrost terminator electrical leads and pull the terminator towards the back of the unit so that the clip disengages from the evaporator tubing. (See Figure 7-30)

NOTE: *When reinstalling the defrost terminator, it must be attached to the second tubing pass of the evaporator. Installing the terminator on the first pass will place it too close to the defrost heater, causing shortened defrost times which will lead to incomplete defrost.*

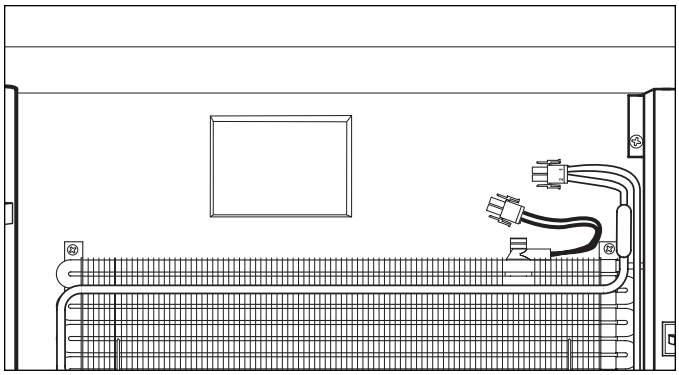


Figure 7-30. Dfrst Terminator, TC/I-2, TF/I-2, TC/I-2V

Defrost Heater Removal (700TC/I-2, 700TF/I-2, 700TF/I-2V)

The defrost heater in the 700TC/I-2, 700TF/I-2 and 700TFI-2V is pressed into the evaporator fins at the front. Heater clips are then hooked from one evaporator tube to another, over the heater.

To access and remove the defrost heater, first remove the two drawers, the heat exchanger cover, the evaporator cover and the evaporator fan shroud. Then, disconnect the heater electrical leads. Grab the return bend of the heater clips with a needle-nose pliers and pull that end of the clip away from the evaporator. Unhook the other end of the heater clip from the evaporator tubing. Cut the heater wire near the electrical connector and pull the heater from the evaporator. (See Figure 7-31)

NOTE: *When installing replacement heater, do not place heater clips over top heater pass. Doing so will interfere with evaporator fan shroud.*

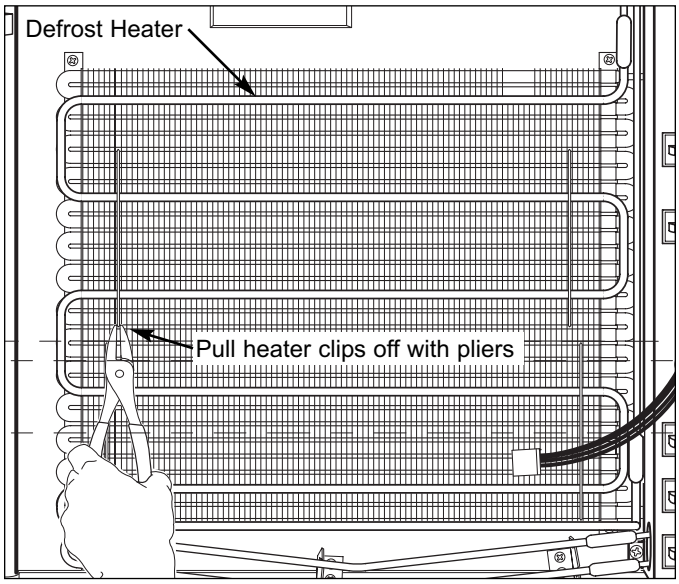


Figure 7-31. Defrost Heater, TC/I-2, TF/I-2, TC/I-2V

Switch Enclosure Assembly Removal (All Tall Units)

The switch enclosure assembly is held in the back right corner of the lower compartment with screws, one at the top and bottom left corners, and depending on the model, one or two along the right side.

To access and remove the switch enclosure assembly, first remove the two drawers, the heat exchanger cover, the the evaporator cover, as well as the drain trough heater on applicable models. Then, disconnect all electrical leads from at the top left side of the enclosure. On applicable models, the fill tube and fill tube heater assembly will also need to be pulled from the right wall. Extract the switch enclosure mounting screws and pull the assembly from the back wall. (See Figure 7-32)

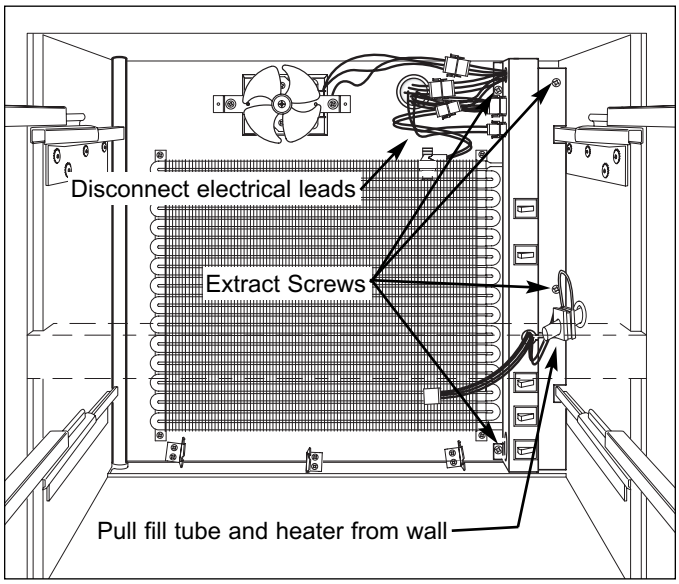


Figure 7-32. Switch Enclosure Removal

Lower Evaporator Thermistor Removal (700TC/I-2, 700TF/I-2, 700TF/I-2V)

In the 700TC/I-2, 700TF/I-2 and 700TFI-2V, a screw secures the lower evaporator thermistor to the top right side of the evaporator, just behind the the top tubing passes.

To access and remove the lower evaporator thermistor, first remove the two drawers, the heat exchanger cover, the lower evaporator cover and the switch enclosure. Then, disconnect the thermistor electrical leads and extract the screw securing it to the right side of the evaporator. (See Figure 7-33)

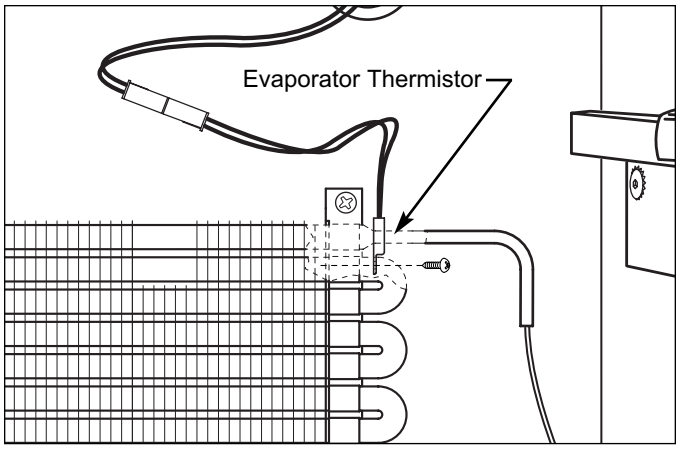


Figure 7-33. Evaporator Thermistor, TC/I-2 & TF/I-2

Lower Compartment Thermistor Removal (700TC/I-2, 700TR-2)

The Lower compartment thermistor in the models 700TC/I-2 and 700TR-2 is attached to the inside of the switch enclosure with a screw.

NOTE: *There is no lower compartment thermistor in the models 700TF/I-2 and 700TF/I-2V.*

To access and remove the lower compartment thermistor, first remove the two drawers, the heat exchanger cover, the lower evaporator cover and the switch enclosure. Then, extract the screw from inside the switch enclosure and pull the thermistor out through the grommet. (See Figure 7-34)

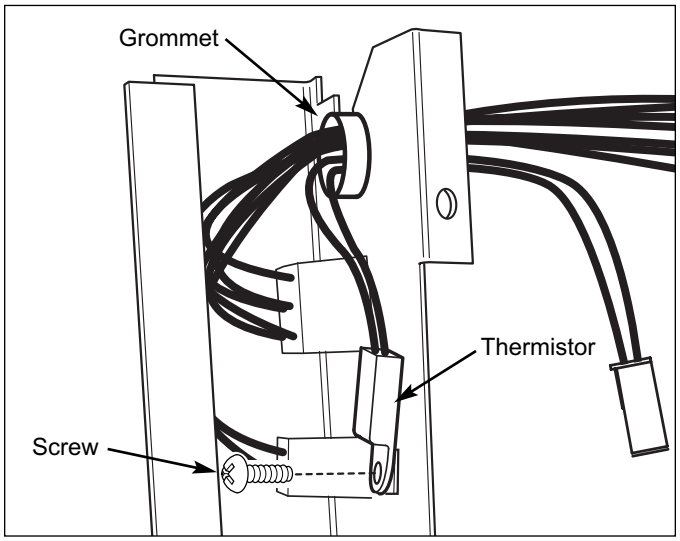


Figure 7-34. Lower Compartment Thermistor, TC/I-2 & TR-2

Fill Tube Heater Removal (700TC/I-2, 700TF/I-2, 700TF/I-2V)

The fill tube heater is attached to the fill tube with a cable tie. The heater electrical connections are behind the switch enclosure.

To access and remove the fill tube heater, first remove the two drawers, the heat exchanger cover, the lower evaporator cover and the switch enclosure. Then, disconnect the heater's electrical leads. Push the wire grommet from the hole in the switch enclosure and pull the heater wiring through the slot in the side of the switch enclosure. (See Figure 7-35) Cut the cable tie to remove the heater from the fill tube.

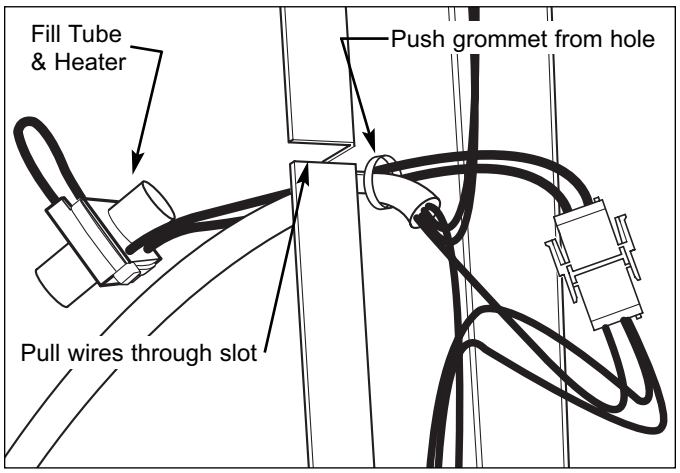


Figure 7-35. Fill Tube Heater, TC/I-2, TF/I-2, TC/I-2V

Lower Compartment Light Switch / Fan Switch / Icemaker Switch Removal (All Tall Units)

The light switch, fan switch and the icemaker switch in the lower section of all tall units are mounted to the switch enclosure. The switches are held in place by tabs on the sides of the switches.

To access and remove a switch, first remove the two drawers, the heat exchanger cover, the lower evaporator cover and the switch enclosure. Then, unplug the electrical leads from the switch being removed. Depress the tab on the side of the switch and push the switch out from the enclosure. (See Figure 7-36)

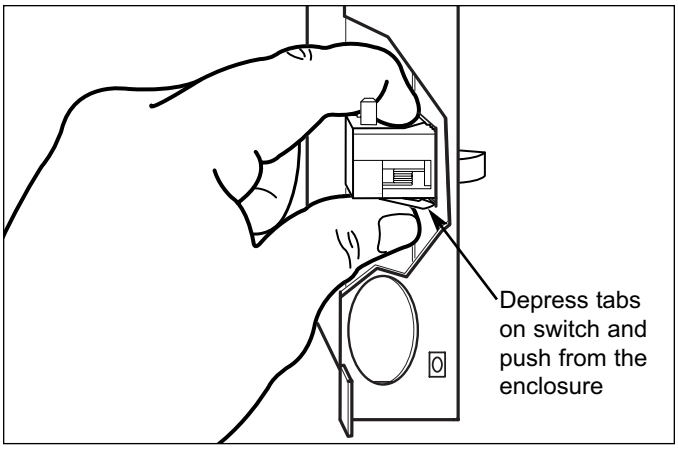


Figure 7-36. Lower Compartment Switch Removal

700-2 TALL UNIT COMPRESSOR AREA ELECTRICAL AND MECHANICAL COMPONENTS

Icemaker Water Valve Removal (700TCI-2, 700TFI-2, 700TFI-2V)

The icemaker water valve assembly is attached to the valve bracket, located on the right side of the compressor area, behind a fiberglass air baffle. A screw passing through a key-hole slot in the valve assembly secures the valve to the valve bracket.

NOTE: *It is not necessary to remove the compressor tray to access the water valve assembly.*

To access and remove the icemaker water valve, first turn off the water supply to the icemaker. Then, remove the kickplate/grille. With a wrench, disconnect the brass compression fitting which holds the water supply line to the water inlet stub. Push the fiberglass air baffle out of the way. With a long Phillips screwdriver, loosen the screw that secures the valve assembly to the valve bracket. Grab the water inlet stub and lift up so that the head of the screw lines up with the large section of the key-hole slot. Pull the valve assembly forward until the screw clears the key-hole slot, then lower the assembly down until the valve body clears the valve bracket and pull the assembly out from the compressor area. (See Figure 7-37) Now, unplug the electrical leads, and disconnect the outlet tube plastic compression fitting with a wrench. (See Figure 7-38)

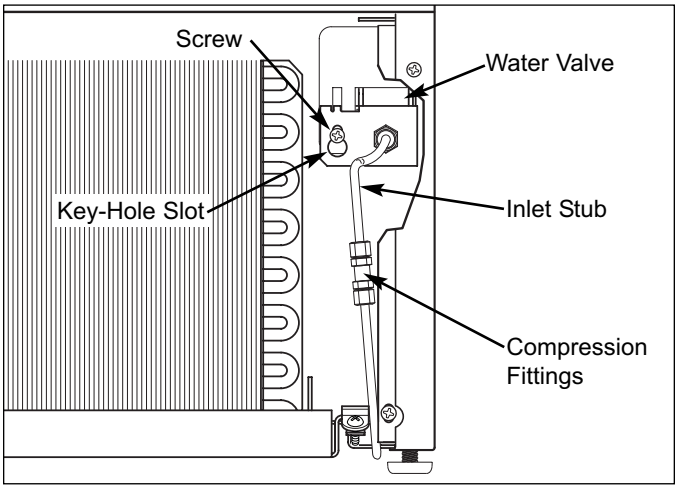


Figure 7-37. Water Valve Removal, TC/I-2, TF/I-2

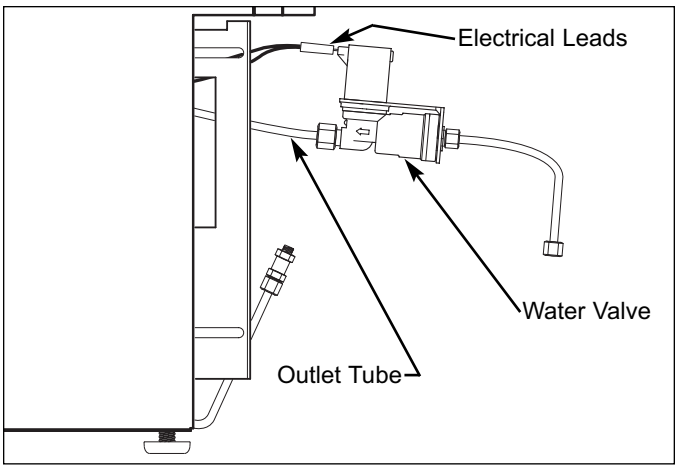


Figure 7-38. Disconnect Water Valve, TC/I-2, TF/I-2

Condenser Fan Assembly Removal (All Tall Units Except 700TF/I-2V)

The condenser fan shroud sets on top of two pegs protruding from the unit tray and two screws at the top of the shroud secure it to the condenser. The condenser fan is mounted to the condenser fan shroud. Three fan mounting brackets are hooked into grommeted holes in the fan shroud. Screws passing through these brackets secure the fan motor to the brackets. The condenser fan blade is held onto the fan motor shaft with a nut.

To access and remove the condenser fan assembly, the kickplate/grille will need to be removed first and the unit tray will need to be slid out. To slide the unit tray out, extract the two screws that secure the tray to the unit, located at the front right and left corners. Grab the front flange of the tray and pull forward. (See Figure 7-39)

NOTE: *It may be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to access the condenser fan assembly.*

Begin removing the condenser fan assembly by disconnecting the condenser fan motor electrical leads. Extract the two screws at the top of the fan shroud and lift the shroud with motor up off of the pegs at the bottom. (See Figure 7-40)

To remove the condenser fan from the shroud, extract the three screws securing the motor to the brackets. The brackets will unhook from the grommeted holes in the condenser fan shroud after the screws are removed. (See Figure 7-41)

To remove the fan blade from the fan motor, grab the blade and motor while turning the nut counterclockwise. Then pull the blade from the motor shaft. (See Figure 7-41)

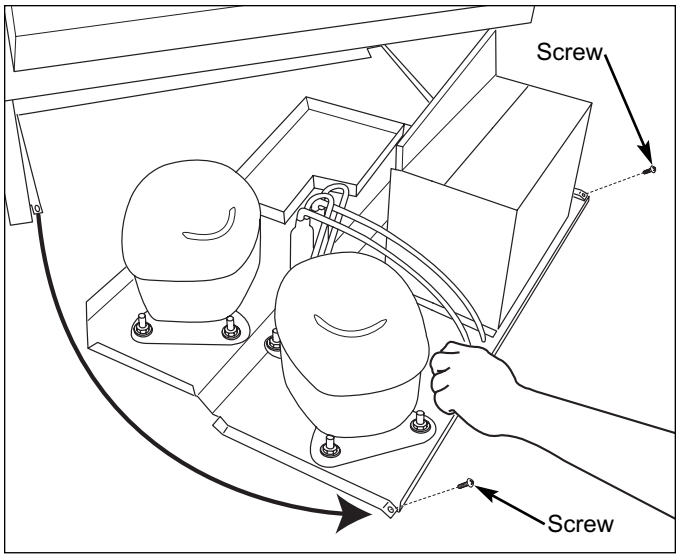


Figure 7-39. Sliding Unit Tray Out

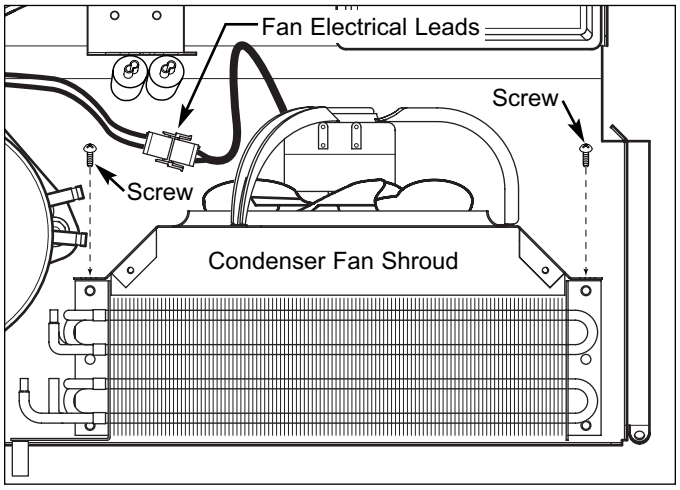


Figure 7-40. Condenser Fan Shroud Removal

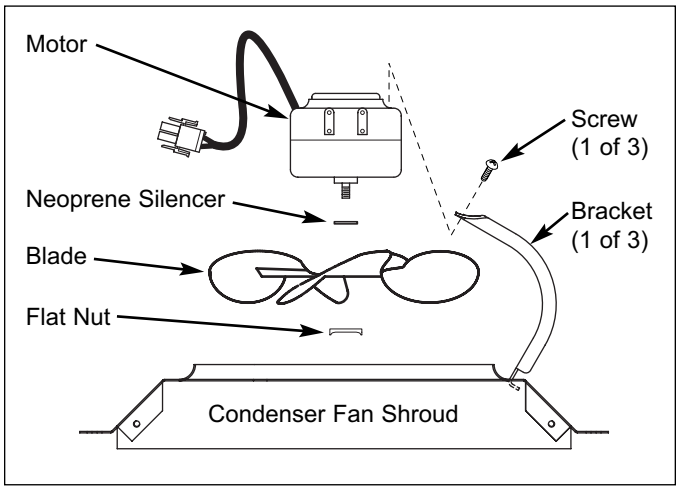


Figure 7-41. Condenser Fan Assembly

Condenser Fan Assembly Removal (700TF/I-2V)

The condenser fan shroud sets on top of two pegs protruding from the unit tray and two screws at the top of the shroud secure it to the condenser. The condenser fan is mounted to the fan bracket, which is then attached to the shroud with rivets. The condenser fan blade is held onto the fan motor shaft with a nut.

To access and remove the condenser fan assembly, the kickplate/grille will need to be removed first and the unit tray will need to be slid out. To slide the unit tray out, extract the two screws that secure the tray to the unit, located at the front right and left corners. Grab the front flange of the tray and pull forward. (See Figure 7-42)

NOTE: *It may be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to access the condenser fan assembly.*

Begin removing the condenser fan assembly by disconnecting the condenser fan motor electrical leads. Extract the two screws at the top of the fan shroud and lift the shroud with motor up off of the pegs at the bottom. (See Figure 7-43)

To remove the condenser fan motor from the fan bracket, first remove the fan blade by turning the nut counterclockwise, then pulling the blade from the motor shaft. Now, extract the two bolts that pass through the fan bracket and motor into nuts on the back side of the motor. (See Figure 7-44)

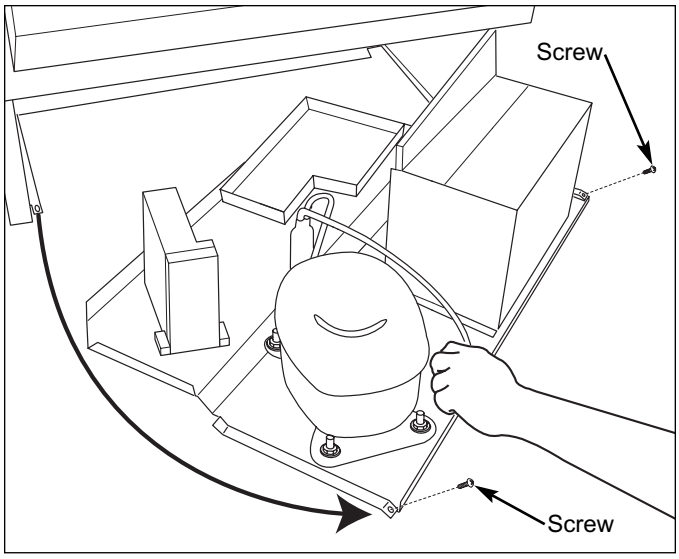


Figure 7-42. Sliding Unit Tray Out

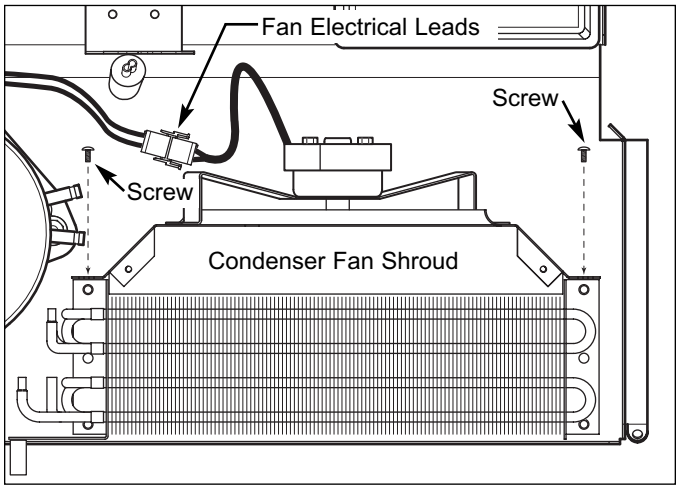


Figure 7-43. Condenser Fan Shroud Removal

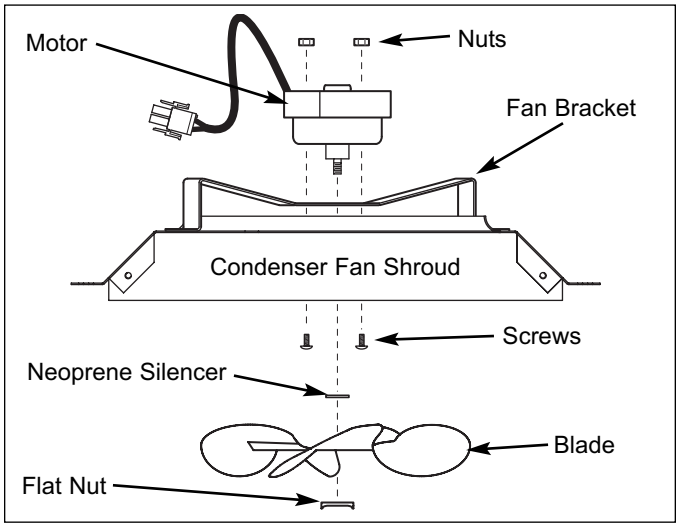


Figure 7-44. Condenser Fan Assembly

Compressor Controller Removal (700TF/I-2V)

Mounting holes in flanges on each side of the compressor controller fit over threaded studs that are press fit to the unit tray. A grounding terminal is placed over the right stud, then washers and nuts are tightened down onto the studs to secure the compressor controller to the unit tray.

To access and remove the compressor controller, the kickplate/grille must be removed first and the unit tray slid out. To slide the unit tray out, extract the two screws that secure the tray to the unit, located at the front right and left corners. Grab the front flange of the tray and pull forward. (See Figure 7-45)

NOTE: *It may be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to access the compressor controller.*

Begin removing the compressor controller by disconnecting the electrical leads. Extract the two nuts and washers from the threaded studs and lift the controller off of the unit tray. (See Figure 7-46)

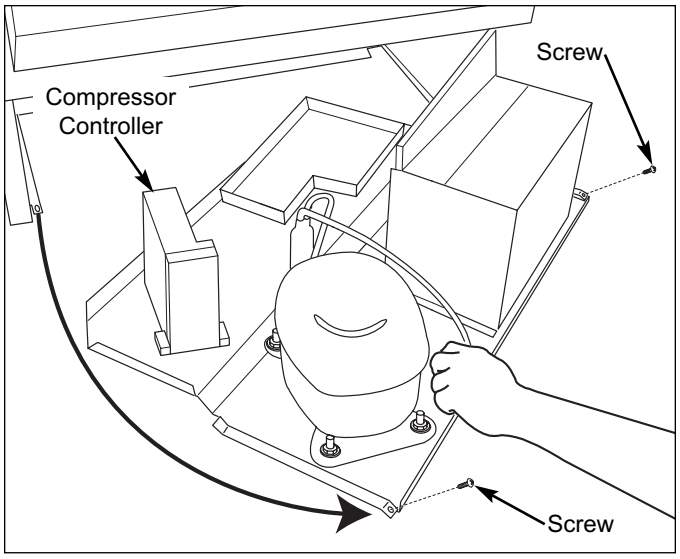


Figure 7-45. Sliding Unit Tray Out

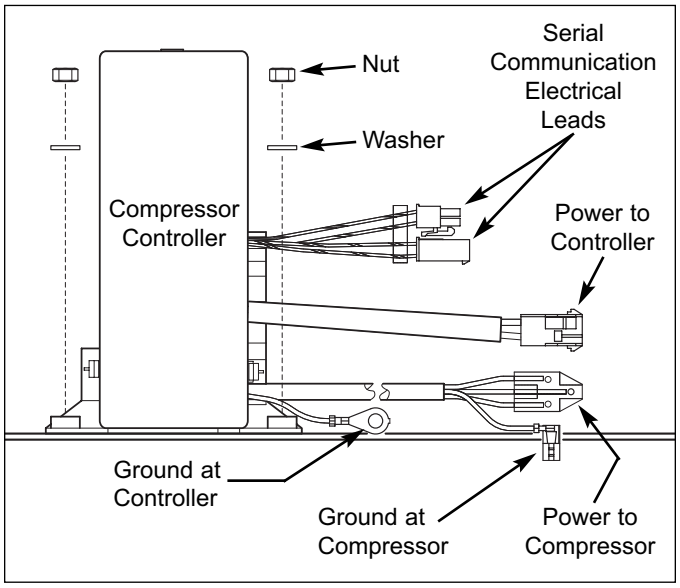


Figure 7-46. Compressor Controller Removal

700-2 TALL UNIT SEALED SYSTEM COMPONENTS

Upper Refrigerator Compartment Evaporator Removal (700TCI-2, 700TR-2)

The upper refrigerator evaporator in the model 700TC/I-2 and 700TR-2 is concealed by the evaporator cover and is attached to the back wall with screws.

NOTE: *Before attempting to remove the evaporator, evacuate the refrigerant from the sealed system.*

To access and remove the upper evaporator, first remove the light diffuser and evaporator cover. Then, extract the screws securing the thermistor to the evaporator and the evaporator to the back wall. With a tube cutter, cut the inlet tube approximately one inch from the end and cut the outlet tube approximately two inches from the end. (See Figure 7-47)

NOTE: *Sweating the joints apart is not recommended as this may induce moisture into the sealed system and could cause a solder restriction in the capillary tube.*

NOTE: *When installing a new evaporator, be sure to thoroughly clean the tubing before brazing. After brazing and inspecting the joint for leaks, it is recommended to apply an acrylic-based paint to the joints to protect the exposed metals from oxidation.*

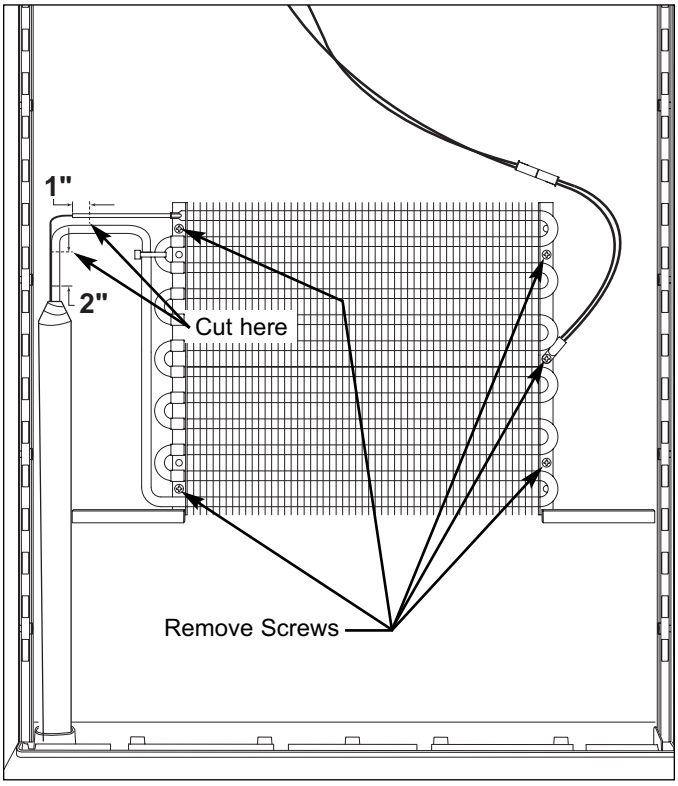


Figure 7-47. Upper Evap Removal, TC/I-2 & TR-2

Lower Compartment Evaporator Removal (All Tall Units)

The lower evaporator in the tall units is concealed by the evaporator cover and is attached to the back wall with screws.

NOTE: *Before attempting to remove the evaporator, evacuate the refrigerant from the sealed system.*

To access and remove the lower evaporator, first remove the heat exchanger cover, evaporator cover and switch enclosure. In the model 700TC/I-2, the evaporator fan shroud will also need to be removed. *(If reusing the existing defrost heater, defrost terminator and evaporator thermistor, they can be removed from the evaporator after it is removed from the unit.)* Then, extract the screws securing the evaporator to the back wall. With a tube cutter, cut the inlet tube approximately one inch from the end and cut the outlet tube approximately two inches from the end. (See Figure 7-48)

NOTE: *Sweating the joints apart is not recommended as this may induce moisture into the sealed system and could cause a solder restriction in the capillary tube.*

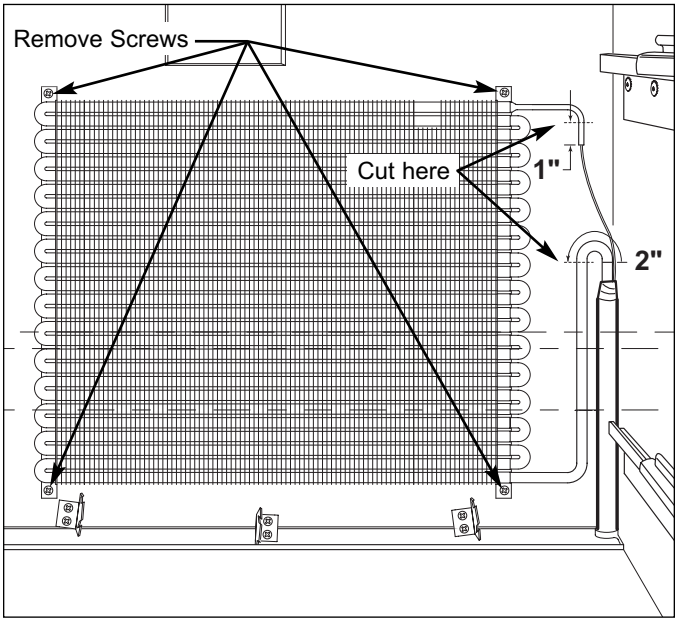


Figure 7-48. Lower Evaporator Removal

High-Side Filter-Drier Removal (All Tall Units)

The high-side filter-driers are located in the center of the unit tray, behind the condenser and are attached to the drier bracket with a cable tie.

NOTE: *Before attempting to remove a filter drier, evacuate the refrigerant from the sealed system.*

To access and remove a high-side filter-drier, the kick-plate/grille will need to be removed first and the unit tray will need to be slid out. To slide the unit tray out, extract the two screws that secure the tray to the unit, located at the front right and left corners. Grab the front flange of the tray and pull forward. (See Figure 7-49)

NOTE: *It may be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to access the filter-driers.*

Begin removing the filter-drier by cutting the cable tie which secures the filter-driers to the drier bracket. With the edge of a file, score a line around the capillary tube approximately one inch from the filter-drier outlet, then fatigue the capillary tube at this line until it separates. With a tube cutter, cut the inlet tube approximately one inch from the filter-drier. (See Figure 7-50)

NOTE: *Sweating the joints apart is not recommended as this may induce moisture into the sealed system and could cause a solder restriction in the capillary tube.*

NOTE: *Check the end of the remaining capillary tube for internal burrs. If burrs exist, re-score a line around the capillary tube (approximately one inch from the end) and fatigue the capillary tube at this new line until it separates.*

NOTE: *When installing the replacement filter-drier, insert the capillary tube until it touches the screen, then pull the capillary tube approximately 3/8" away from the screen before brazing. (See Figure 7-51) When installing a new filter-drier, be sure to thoroughly clean the tubing before brazing.*

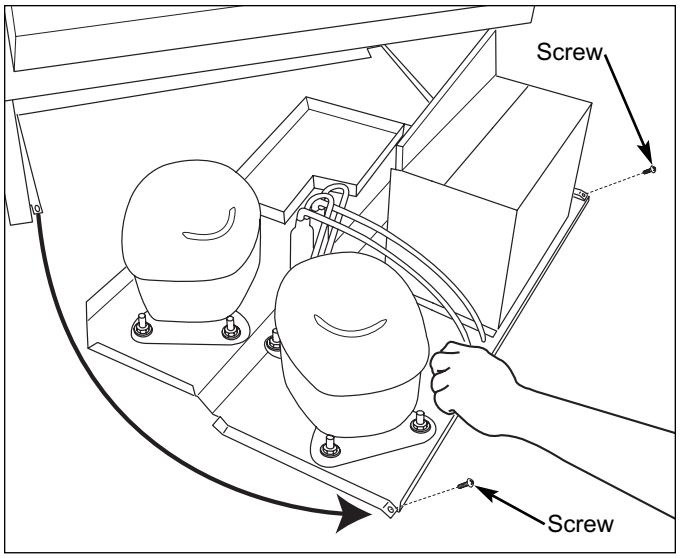


Figure 7-49. Sliding Unit Tray Out

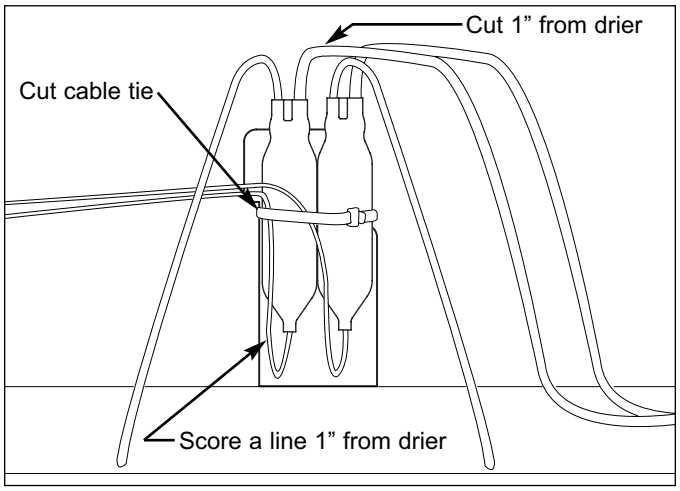


Figure 7-50. Filter-Drier Removal

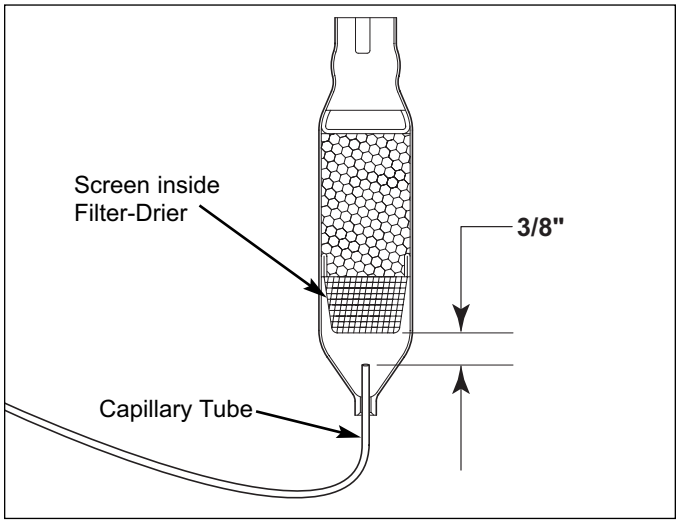


Figure 7-51. Filter-Drier Cut-Away View

Compressor Removal (All Tall Units)

The compressors have four rubber compressor grommets inserted into their base. Cylindrical metal spacers are placed over threaded studs that are press fit to the unit tray. The compressor grommets fit over the spacers and a washer sets on top of the grommet and spacer. A nut is then installed on the threaded stud and tightened down on the washer and spacer.

NOTE: *Before attempting to remove a compressor, evacuate the refrigerant from the sealed system.*

To access and remove a compressor, the kickplate/grille will need to be removed first and the unit tray will need to be slid out. To slide the unit tray out, extract the two screws that secure the tray to the unit, located at the front right and left corners. Grab the front flange of the tray and pull forward. (See Figure 7-49)

After the tray is slid out, use a flat-blade screwdriver to remove the compressor electrical cover, then disconnect the the electrical leads from the compressor. (See Figure 7-52)

Begin removing the compressor by cutting the inlet and outlet tubing with a tube cutter, approximately one inch from the compressor ports. Extract the nuts and washers from the threaded studs, then lift the compressor off of the studs. (See Figure 7-53)

NOTE: *Sweating the joints apart is not recommended as this may induce moisture into the sealed system.*

NOTE: *The high-side filter-drier must be replaced whenever servicing the sealed system.*

NOTE: *When installing a compressor, be sure to thoroughly clean the tubing before brazing.*

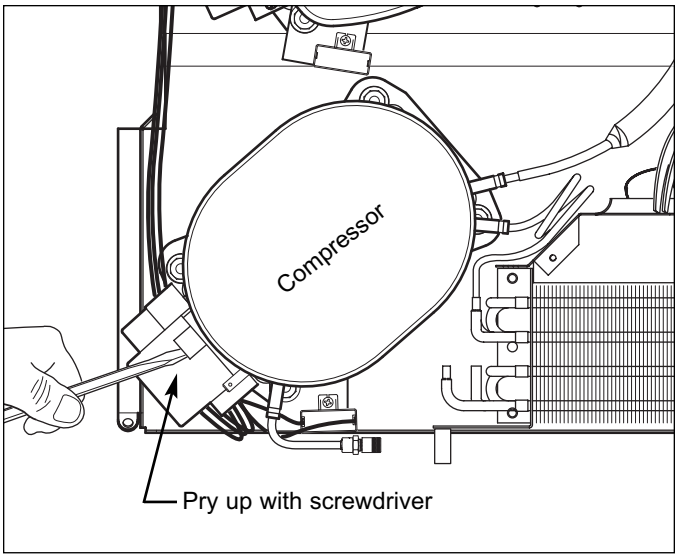


Figure 7-52. Removing Compressor Electrical Cap

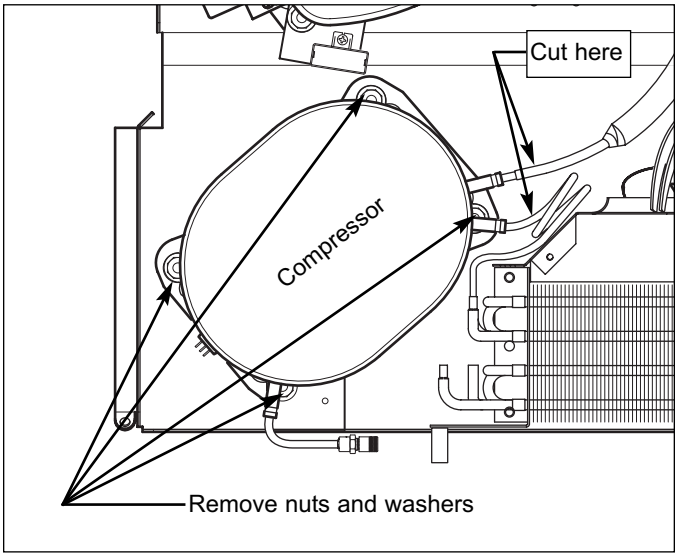


Figure 7-53. Compressor Removal

Condenser Removal (All Tall Units)

The condenser is secured to the unit tray by four rivets that pass up through the unit tray into the condenser side brackets.

NOTE: *Before attempting to remove the condenser, evacuate the refrigerant from the sealed system(s).*

To access the condenser, the kickplate/grille will need to be removed first and the unit tray will need to be slid out. To slide the unit tray out, extract the two screws that secure the tray to the unit, located at the front right and left corners. Grab the front flange of the tray and pull forward. (See Figure 7-54)

NOTE: *It will be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to remove the condenser.*

Begin removing the condenser by cutting the inlet and outlet tubes to and from the condenser, approximately one inch from the weld joints. Then, prop the front of the unit tray up and drill out the four rivets securing the condenser to the tray. (See Figure 7-55)

NOTE: *Sweating the joints apart is not recommended as this may induce moisture into the sealed system.*

NOTE: *The high-side filter-drier(s) must be replaced whenever replacing the condenser.*

NOTE: *To reattach the condenser to the unit tray, use #10-24 X 3/8" bolts (#6200020) passing up through the unit tray and condenser brackets with #10-24 Hex nuts (#6150030) tightened down on top.*

NOTE: *When installing the replacement condenser, be sure to thoroughly clean the tubing before brazing.*

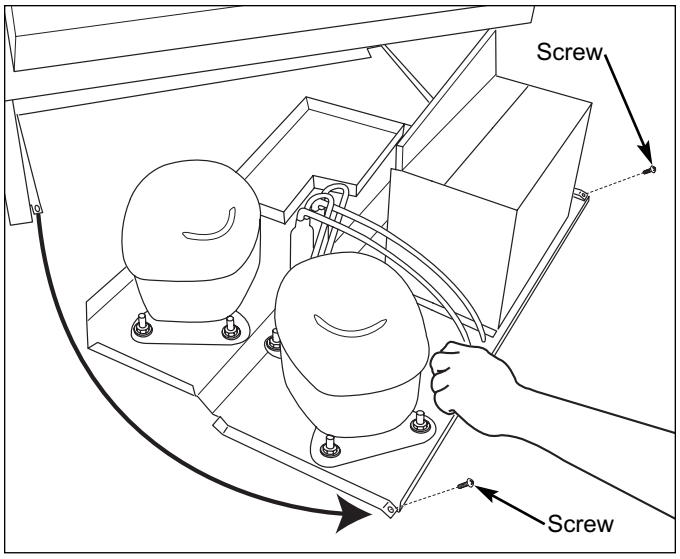


Figure 7-54. Sliding Unit Tray Out

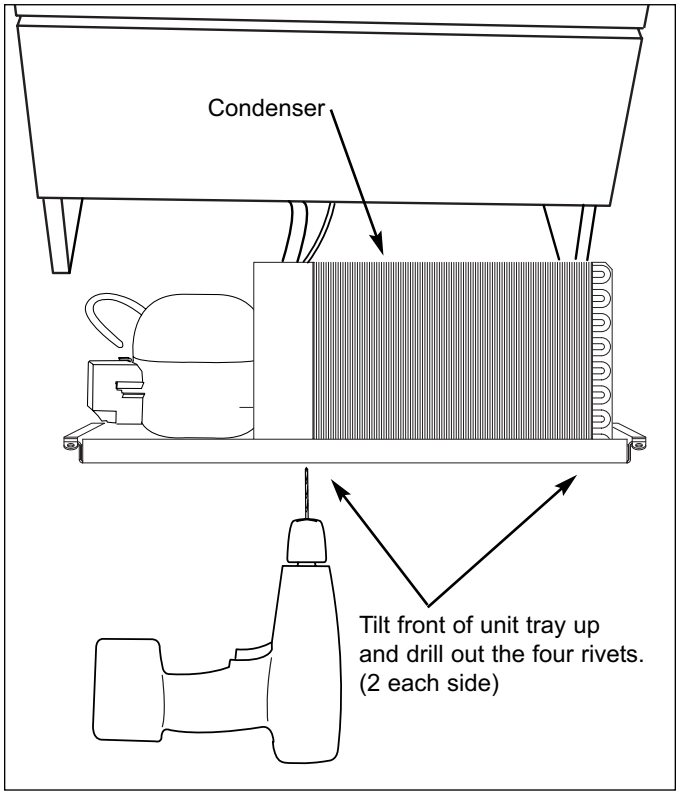


Figure 7-55. Condenser Removal

Upper Compartment Heat Exchanger Removal (700TC/I-2, 700TR-2)

The upper compartment heat exchanger in the models 700TC/I-2 and 700TR-2 passes down through a hole in the back left corner of the mullion. The heat exchanger then passes down through the lower compartment behind the heat exchanger cover and through a hole in the back left corner of the lower compartment floor.

NOTE: *Before attempting to remove a heat exchanger, evacuate the refrigerant from the sealed system.*

To access and remove the upper compartment heat exchanger, the following components must first be removed: the upper light diffuser, upper evaporator cover, both drawer assemblies, heat exchanger cover in the lower compartment and the kickplate/grille. The unit tray will also need to be slid out.

NOTE: *It will be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to access and remove the heat exchanger.*

Begin removing the heat exchanger by cutting the inlet and outlet tubes at the evaporator. (See Figure 7-56) Cut the suction line approximately two inches from the compressor. (See Figure 7-57) Since the filter-drier will be replaced at the same time, cut the drier inlet tube approximately one inch from the drier, leaving the capillary tube attached. (See Figure 7-58) The heat exchanger will be scrapped, so use a tin snips or similar tool to cut the heat exchanger near the hole in the mullion and the hole in the floor of the lower compartment. Pull the pieces of the heat exchanger out and clear the Hot-Melt away from the holes.

NOTE: *To avoid damaging the unit from the brazing torch flame, remove the evaporator from the compartment and attach the new heat exchanger to the evaporator outside of the unit.*

NOTE: *Applying dish soap on the tubing insulation of the heat exchanger and around the holes in the mullion and lower compartment floor, will assist in working the heat exchanger through the holes.*

NOTE: *When installing the replacement heat exchanger, be sure to thoroughly clean the tubing before brazing.*

NOTE: *Apply a bead of silicone around the heat exchanger where it passes through the holes in the mullion and lower compartment.*

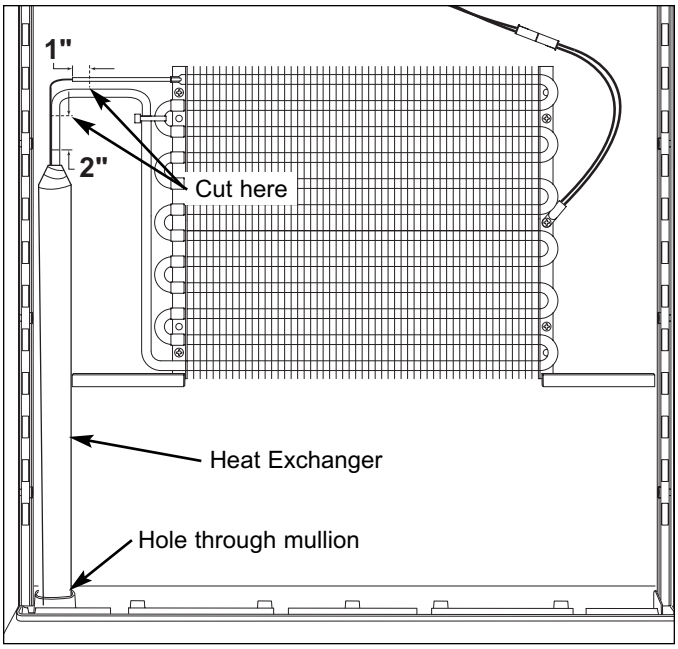


Figure 7-56. Cut Inlet and Outlet at Evaporator

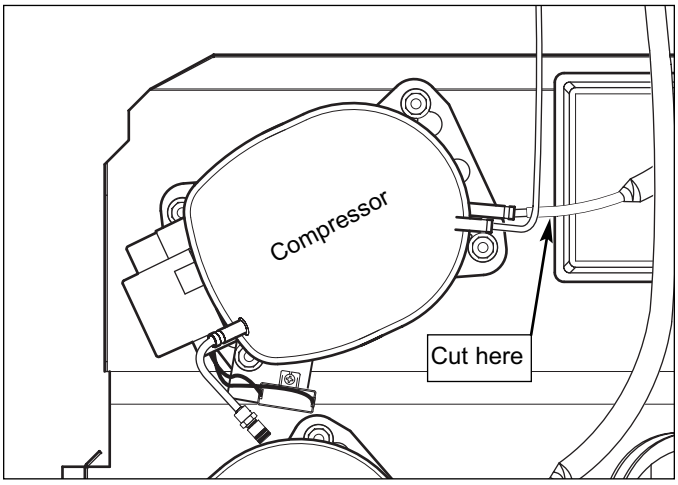


Figure 7-57. Cut Suction line at compressor

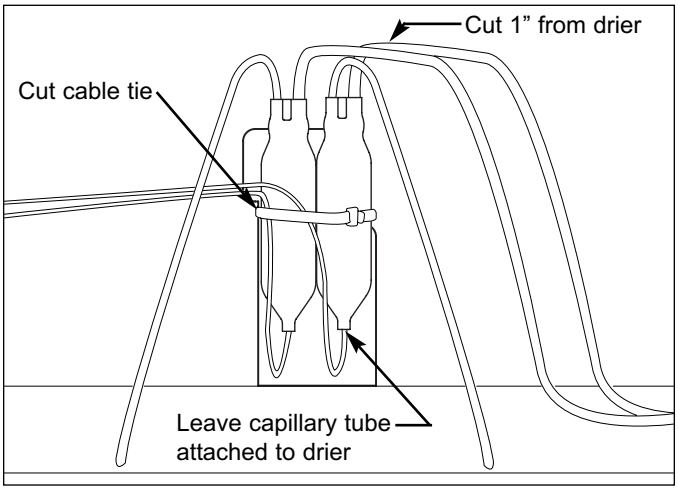


Figure 7-58. Cut Inlet to Filter-Drier

Lower Compartment Heat Exchanger Removal (All Tall Units)

The lower compartment heat exchanger is behind the switch enclosure and passes down through a hole in the back right corner of the lower compartment floor.

NOTE: *Before attempting to remove a heat exchanger, evacuate the refrigerant from the sealed system.*

To access and remove the lower compartment heat exchanger, the following components must first be removed: both drawer assemblies, the heat exchanger cover, lower evaporator cover, switch enclosure and the kickplate/grille. The unit tray will also need to be slid out.

NOTE: *It will be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to access and remove the heat exchanger.*

Begin removing the heat exchanger by cutting the inlet and outlet tubes at the evaporator. (See Figure 7-59) Cut the suction line approximately two inches from the compressor. (See Figure 7-60) Since the filter-drier will be replaced at the same time, cut the drier inlet tube approximately one inch from the drier, leaving the capillary tube attached. (See Figure 7-61) The heat exchanger will be scrapped, so use a tin snips or similar tool to cut the heat exchanger near the hole in the floor of the lower compartment. Pull the pieces of the heat exchanger out and clear the Hot-Melt away from the hole.

NOTE: *To avoid damaging the unit from the brazing torch flame, remove the evaporator from the compartment and attach the new heat exchanger to the evaporator outside of the unit.*

NOTE: *Applying dish soap on the tubing insulation of the heat exchanger and around the holes in the lower compartment floor will assist in working the heat exchanger through the hole.*

NOTE: *When installing the replacement heat exchanger, be sure to thoroughly clean the tubing before brazing.*

NOTE: *Apply a bead of silicone around the heat exchanger where it passes through the hole in the lower compartment.*

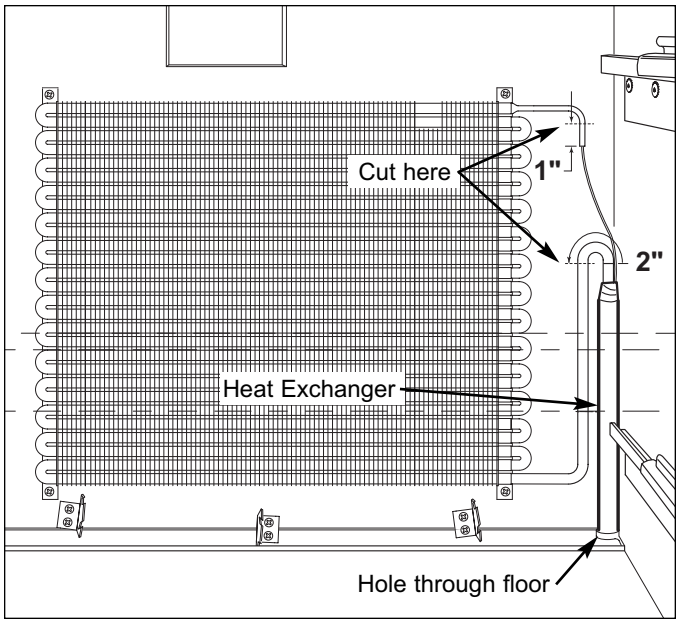


Figure 7-59. Cut Inlet and Outlet at Evaporator

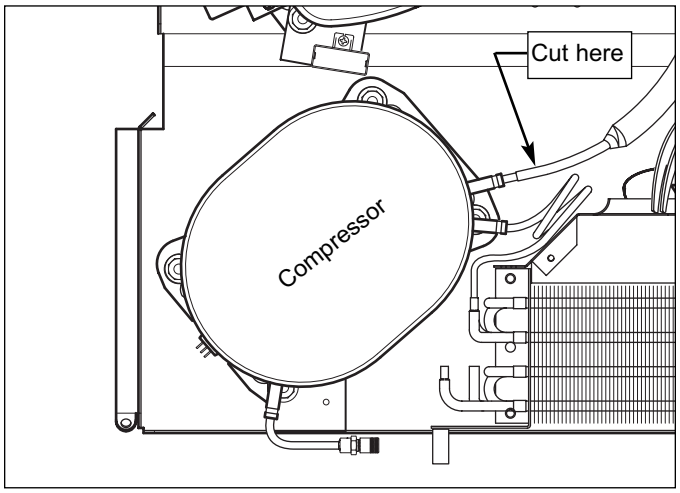


Figure 7-60. Cut Suction line at compressor

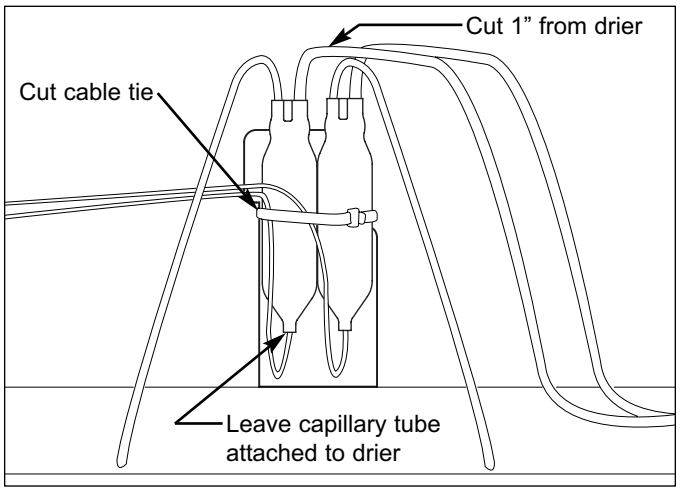


Figure 7-61. Cut Inlet at Filter-Drier

700-2 BASE UNIT EXTERIOR COSMETIC AND MECHANICAL COMPONENTS

Kickplate/Grille Removal (All Base Units)

The kickplate/grille is attached by four screws passing through the kickplate into adjustable kickplate brackets.

NOTE: *Because drawer panels may extend down in front of the kickplate/grille, it may be necessary to remove the bottom drawer to gain access.*

To remove the kickplate/grille, extract the four screws (two on each side) and pull the kickplate grille forward. (See Figure 7-62)

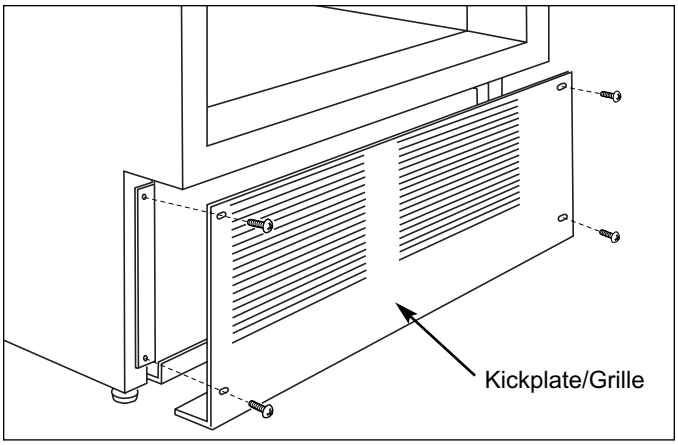


Figure 7-62. Kickplate/Grille Removal

Drawer Assembly Removal (All Base Units)

There are inverted channels on both sides of the drawer tubs which rest on telescoping drawer slide assemblies. A pin at the front of each drawer slide fits into a hole in the inverted channel of each drawer tub, holding the drawer assembly in place. (See Figure 7-63)

The top drawer assembly has a control cable that must be disconnected during drawer removal. To remove the top drawer, pull the drawer open six inches to ten inches, then lift the front of the drawer up and off of the pins at the end of the drawer slides, then push the slides back in. (See Figure 7-63) Carefully place the drawer assembly face down directly in front of the unit. Disconnect the control cable at the interior left rear of the unit by turning the the collar on the connector counterclockwise and unplugging the pins from the socket. (See Figure 7-64)

To remove the bottom drawer assembly, pull the drawer open and lift the front of the drawer up and off of the pins at the end of the drawer slides. Pull the drawer assembly forward and out. Then, push the telescoping drawer slide assemblies back in. (See Figure 7-63)

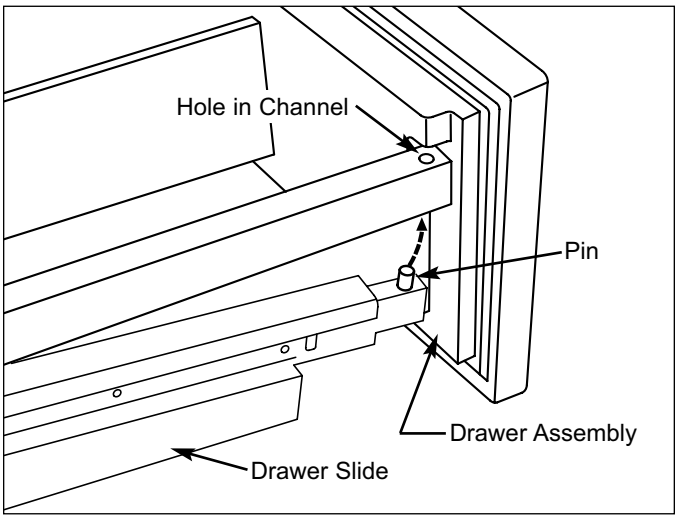


Figure 7-63. Drawer Assembly Removal

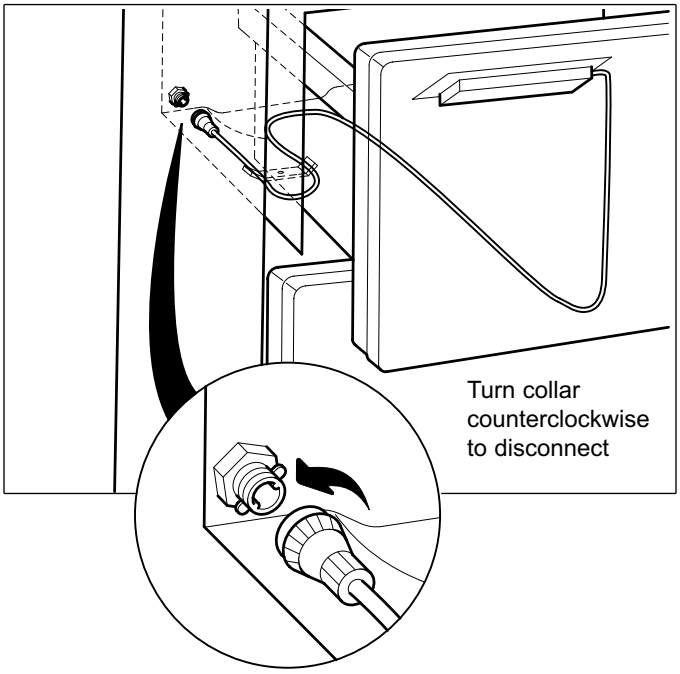


Figure 7-64. Disconnecting Control Cable

Side Trim Molding Strip Removal (All Base Units)

The side trim molding strips are held in place by two unit-to-cabinet brackets which are attached to the sides of the cabinet.

NOTE: *Removing the drawers first will make this task easier.*

To remove the side trim molding strips, place a straight-blade screwdriver in the channel at the bottom of the molding. (See Figure 7-65) Gently pull the molding forward until the face-frame edge of the molding is accessible. Place another straight-blade screwdriver under the face-frame edge and gently work the molding away from the face-frame and out of the two unit-to-cabinet brackets. (See Figure 7-65)

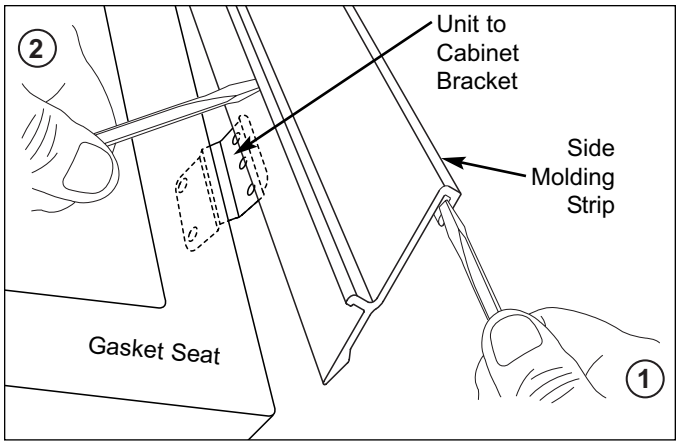


Figure 7-65. Side Molding Strip Removal

Drawer Gasket Removal (All Base Units)

The drawer gaskets are pressed into retaining channels that are molded into the drawer liners.

NOTE: *Drawer assemblies must be removed from the unit in order to remove and/or install gaskets.*

To remove a drawer gasket, simply pull the gasket from the retaining channel. (See Figure 7-66)

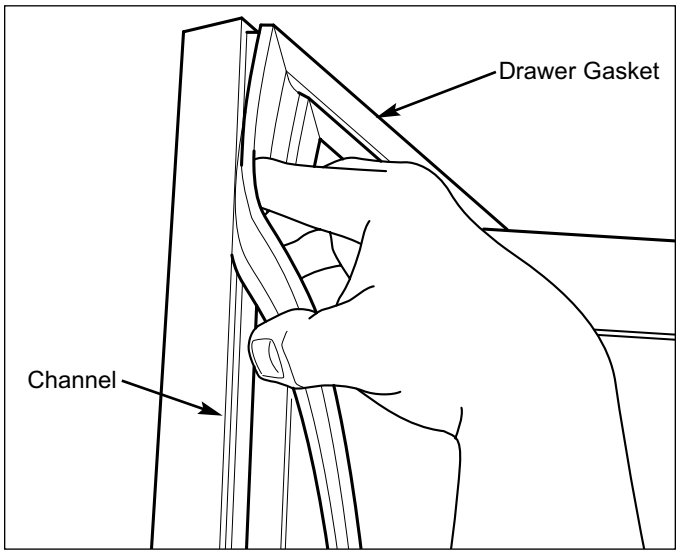


Figure 7-66. Gasket Removal

700-2 BASE UNIT INTERIOR COSMETIC, MECHANICAL AND ELECTRICAL COMPONENTS

Control Panel Assembly Removal (All Base Units)

The control panel assembly is attached to the inside of the top drawer assembly with three screws.

To remove the control panel assembly, extract the three screws and tilt the control panel back towards the drawer tub. (See Figure 7-67) Now, disconnect the control cable from the control panel assembly and lift the control panel assembly up and out.

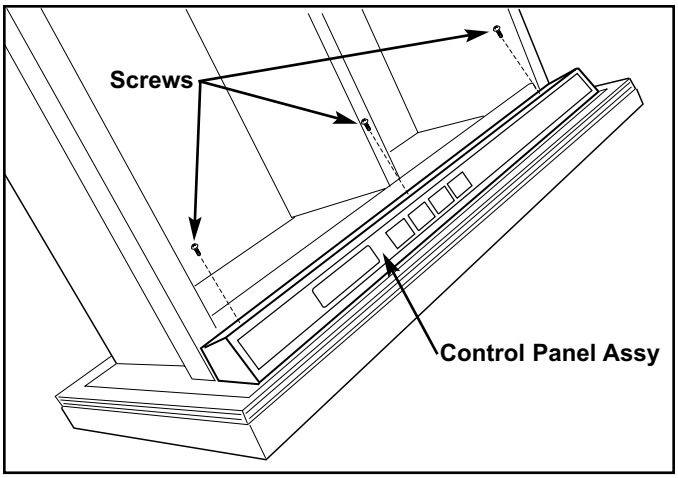


Figure 7-67. Control Panel Assy Removal

Control Cable Removal (All Base Units)

One end of the control cable is attached at the interior left rear of the upper drawer compartment. The cable is routed through a wire channel that is stuck to the bottom of the upper drawer tub, and then up through a channel in the drawer liner. The other end of the control cable is attached to the control panel.

To remove the control cable, the upper drawer assembly must be extracted and the control panel must be removed first. Then, extract the screw and P-clamp from the top of the drawer assembly. Remove the wire channel from the bottom of the drawer tub, which is held in place with double-stick tape, and pull the cable down through the channel in the drawer liner. (See Figure 7-68)

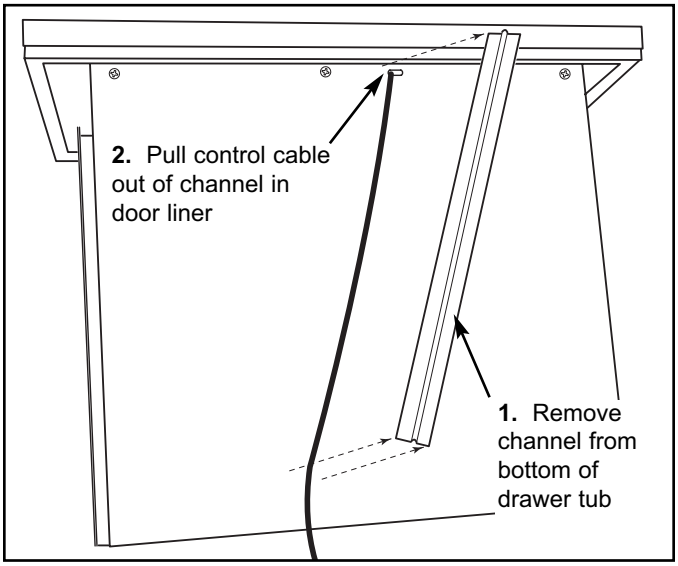


Figure 7-68. Control Cable Removal

Lighting Removal (All Base Units)

The base units have two light bulbs, one in the ceiling of the top drawer area, and one at the bottom of the divider between the two drawers. (See Figure 7-69)

The light socket is encased in rubber and a rubber flange at the back of the socket holds it in the light socket bracket. (See Figure 7-69)

To replace a light bulb, screw the bulb counterclockwise to remove it and clockwise to install it.

To remove the light socket, pull it from the bracket and disconnect the electrical leads.

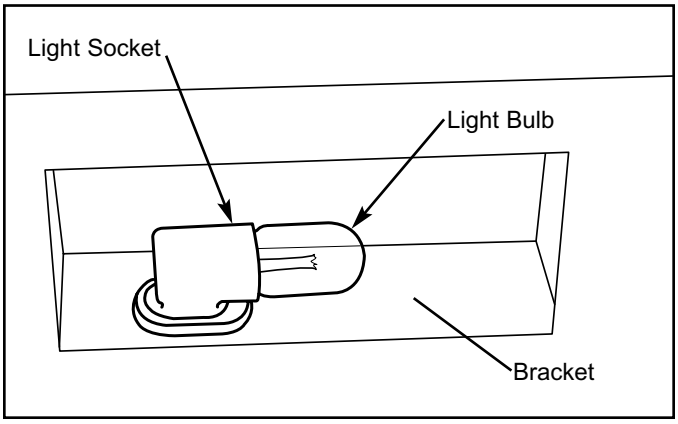


Figure 7-69. Light Bulb and Socket

Mullion Divider Assembly Removal (700BR-2 Only)

The mullion divider in the 700BR-2 sets on top of two divider supports at the back and the mullion between the two drawer areas at the front. A gasket around the top edge of the divider keeps the divider in place by pressing tight to the front, back and sides of the compartment.

To remove the mullion divider, reach into the lower compartment and push the divider upwards. (See Figure 7-70)

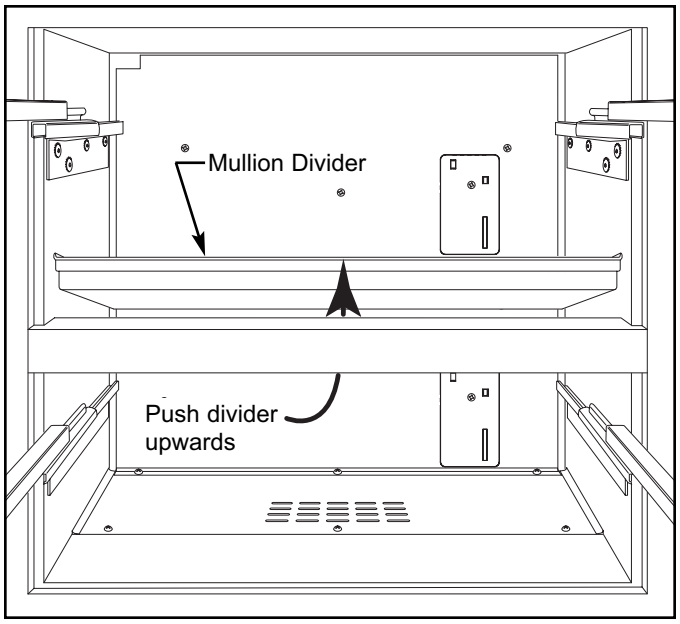


Figure 7-70. Mullion Divider Removal, BR-2

Mullion Divider Supports Removal (700BR-2 Only)

The two mullion divider supports in the 700BR-2 are attached to each side wall at the back of the compartment with two screws each.

To remove the two divider supports, the drawers and the mullion divider assembly will need to be removed first. Then, extract the screws from the supports and pull the supports towards the front of the unit. (Not shown)

Drawer Closer Assembly Removal (All Base Units)

The drawer closer assemblies are located on the right side wall, towards the back of the compartment. Two screws secure each drawer closer to the wall.

To access and remove a drawer closer assembly, first remove the appropriate drawer. Then, extract the two screws that secure the drawer closer to the wall and pull the drawer closer assembly from the wall. (See Figure 7-71)

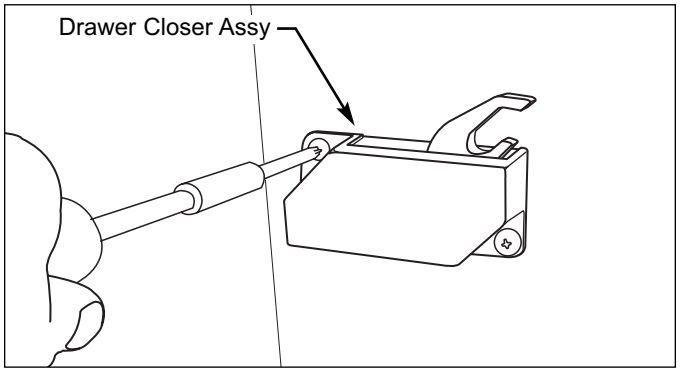


Figure 7-71. Drawer Closer Assembly Removal

Drawer Slide Assembly Removal (All Base Units)

There are four drawer slide assemblies in 700-2 Series units, two on each side wall. The drawer slide assemblies are attached to the side walls with Allen-head screws passing through the drawer slide bracket into blind threaded inserts.

To remove a drawer slide assembly, first remove the drawer. Then, extract the drawer slide mounting screws with a 5/32" Allen-head wrench, and pull the drawer slide assembly away from the wall. (See Figure 7-72)

NOTE: *The pins at the end of the drawer slides are replaceable. Screw the pins counterclockwise to remove them. (See Figure 7-20 earlier in this section)*

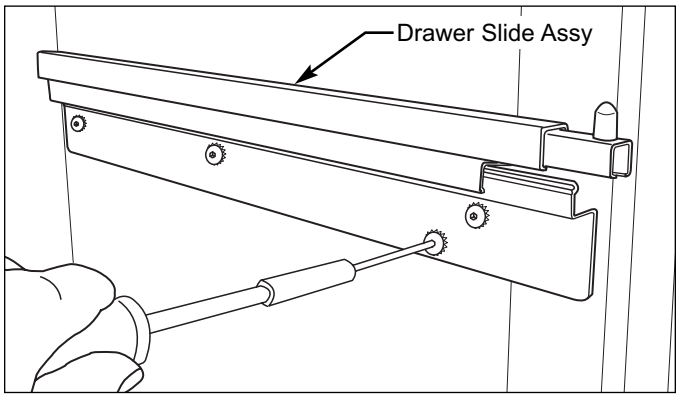


Figure 7-72. Drawer Slide Assembly Removal

Reed Switch & Compartment Thermistor Removal (All Base Units)

The Reed Switches control the compartment lighting and evaporator fan. The upper Reed Switch in the 700BR-2 and 700BF-2, and the lower Reed Switch in the 700BR-2 also contain the compartment thermistor. (See Figure 7-73)

NOTE: *If the compartment thermistor is defective, the complete Reed switch assembly must be replaced.*

The Reed switches are attached to the evaporator cover with one screw each.

To remove a Reed switch, extract the screw. Lean the top of the Reed switch forward and disconnect the electrical leads from the back side, then pull the Reed switch out. (See Figure 7-74)

NOTE: *When reinstalling a Reed switch, plug in the electrical leads. Place the bottom flange of the switch housing into the opening in the evaporator cover. Then, rotate the top back and insert the screw.*

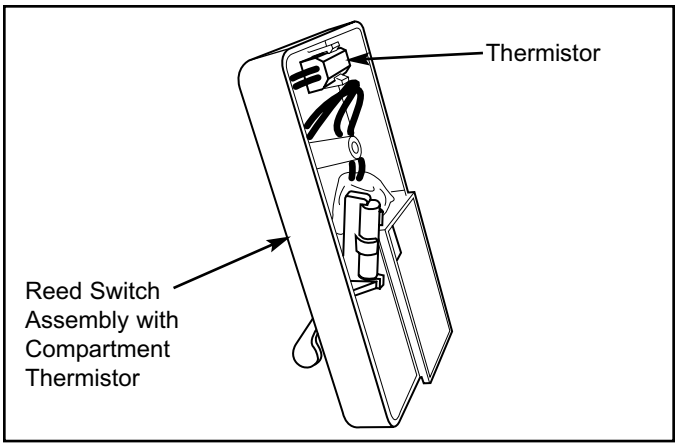


Figure 7-73. Reed Switch with Thermistor

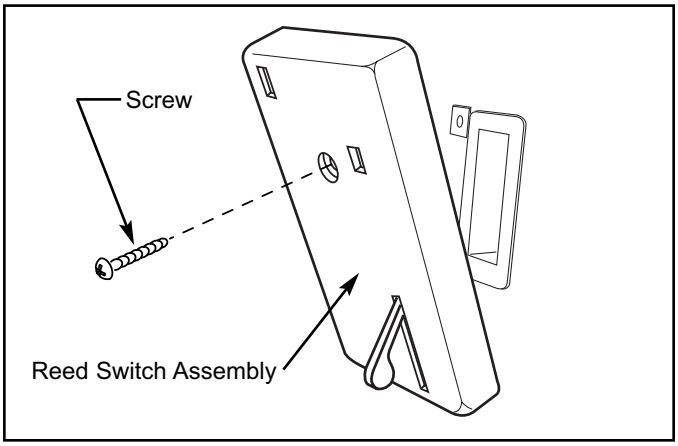


Figure 7-74. Reed Switch Assembly Removal

Icemaker Assembly and Fill Tube Heater Removal (700BFI-2 Only)

The icemaker in the 700BFI-2 is attached to a support plate with three screws that pass up through the plate into the bottom of the icemaker. The ice level arm is also attached to the support plate using two P-clamps and two screws. The P-clamps fit around rods at the back of the ice level arm. Screws passing through the P-clamps secure them to the support plate at the rear. At the front, a connecting rod is used to attach the ice level arm to the icemaker shut-off arm. Two screws at the top of the icemaker assembly and one screw at the bottom pass through the back air duct into screw grommet/stand-offs to hold the assembly in place. (See Figure 7-75)

Remove the bottom drawer to gain access to the icemaker assembly. *(Removing the top drawer is not necessary, but will make this task easier.)* Extract the bottom icemaker mounting screw and the two top mounting screws (See Figure 7-75). Lower the assembly down and disconnect the wire harness from the right side wall. Pull the icemaker with the fill tube heater/ice maker harness out of the unit. (See Figure 7-75)

The icemaker can now be removed from the support plate by first sliding the connecting rod off of the shut-off arm, then extracting the three screws from the bottom of the icemaker.

The fill tube heater can be removed from the fill tube by cutting the cable tie which holds the heater to the tube.

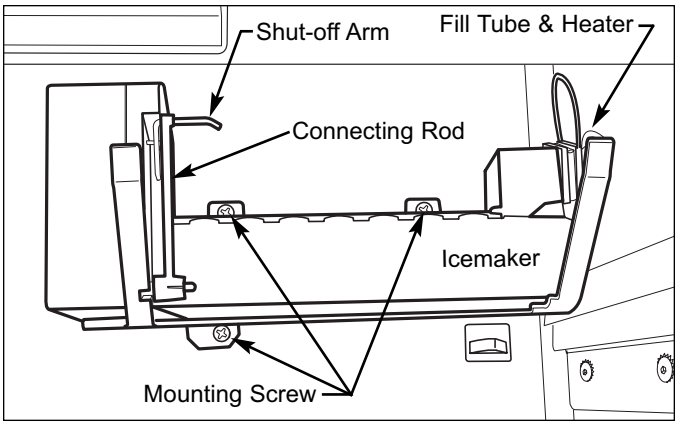


Figure 7-75. Icemaker Assembly, BFI-2

Sump Cover Assembly Removal (All Base Units)

The front of the sump cover is held in place with three screws that pass through the cover and into the floor of the unit. At the rear of the sump cover, three screws pass through the cover into a flange at the bottom of the back duct.

To access the sump cover, remove the bottom drawer and the bottom drawer closer. On the 700BFI-2, the icemaker will also need to be removed. *(Removing the top drawer is not necessary, but will make this task easier.)*

Remove the sump cover by extracting the three screws at the front of the sump cover and the three screws at the back. (See Figure 7-76) Slide the sump cover forward and lift up.

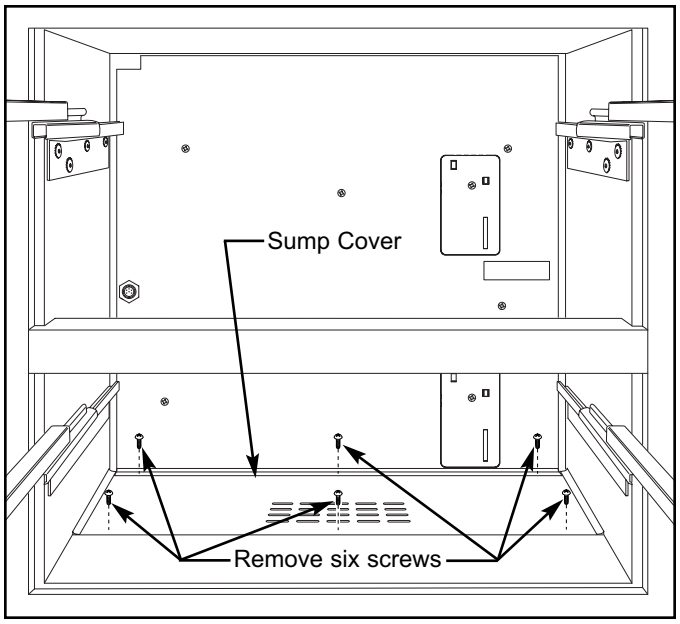


Figure 7-76. Sump Cover Removal

Evaporator Thermistor Removal (All Base Units)

The evaporator thermistor is fastened by cable ties to a return elbow of the evaporator, on the right side.

To access the evaporator thermistor, remove the bottom drawer, bottom drawer closer and the sump cover. *(Removing the top drawer is not necessary, but will make this task easier.)* Then, disconnect the thermistor electrical leads. Cut the cable ties which hold the thermistor to the evaporator and lift the thermistor out of the sump area. (See Figure 7-77)

NOTE: *You may see a Y-harness between the thermistor electrical connections, with wires exiting through the heat exchanger hole in the sump. This is for factory test purposes and it can be removed or bypassed.*

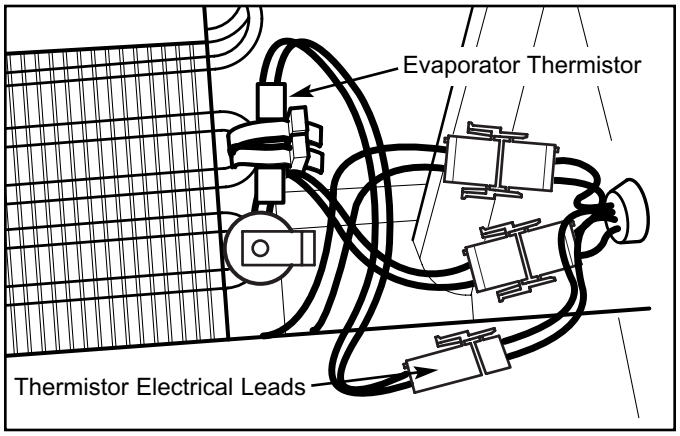


Figure 7-77. Evaporator Thermistor Removal

Defrost Terminator Removal (700BF/I-2 Only)

The defrost terminator in the 700BF/I-2 is attached to a return elbow of the evaporator, on the right side.

To access the defrost terminator, remove the bottom drawer, bottom drawer closer, icemaker and the sump cover. *(Removing the top drawer is not necessary, but will make this task easier.)* Then, disconnect the terminator electrical leads. Disengage the terminator clip from the tubing and lift the terminator out of the sump area. (See Figure 7-78)

NOTE: *When reinstalling the defrost terminator, it must be attached to the the same elbow it was removed from. Failure to do so could cause shortened defrost times which will lead to incomplete defrost.*

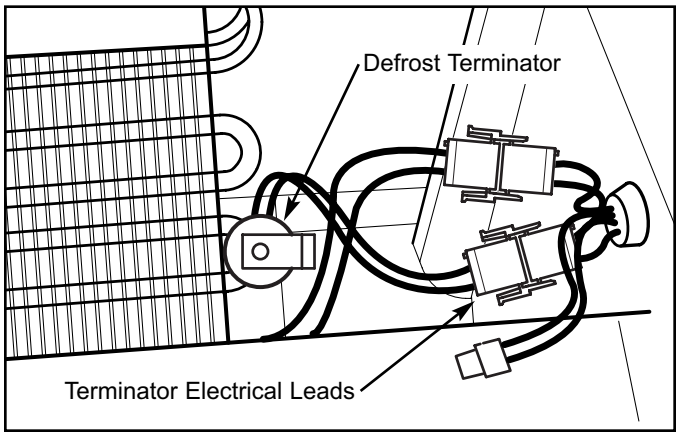


Figure 7-78. Defrost Terminator Removal, BF/I-2

Defrost Heater Removal (700BF/I-2 Only)

The defrost heater in the 700BF/I-2 is pressed into the evaporator fins at the front. Heater clips are then hooked from one evaporator tube to another, over the heater.

To access and remove the defrost heater, first remove the bottom drawer, bottom drawer closer, icemaker and the sump cover. *(Removing the top drawer is not necessary, but will make this task easier.)* With a needle-nose pliers, pull the heater clips off of the evaporator and pull the defrost heater from the front of the evaporator. (See Figure 7-79)

NOTE: *When installing a replacement heater, make sure it is positioned as far left as possible. Installing the heater too close to the terminator could cause shortened defrost times which will lead to incomplete defrost.*

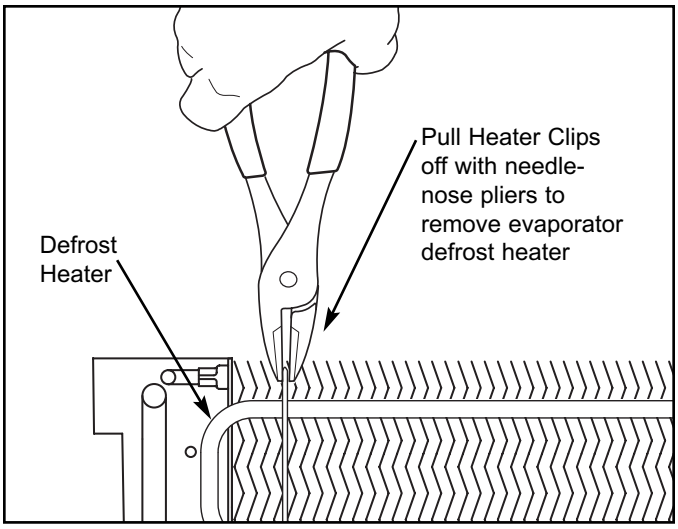


Figure 7-79. Defrost Heater Removal, BF/I-2

Control Board Assembly Removal (All Base Units)

The control board assembly sets in the right side of the sump area. A flange on the right side of the control board assembly fits into a groove in the sump to help locate it. There are also raised areas at the front and back of the sump that hold the control board assembly in place.

To access and remove the control board assembly, first remove the bottom drawer, bottom drawer closer and sump cover. On the 700BFI-2, the icemaker will also need to be removed. *(Removing the top drawer is not necessary, but will make this task easier.)* Then, unplug all electrical leads running to and from the control board assembly and lift the assembly from the sump area. (See Figure 7-80)

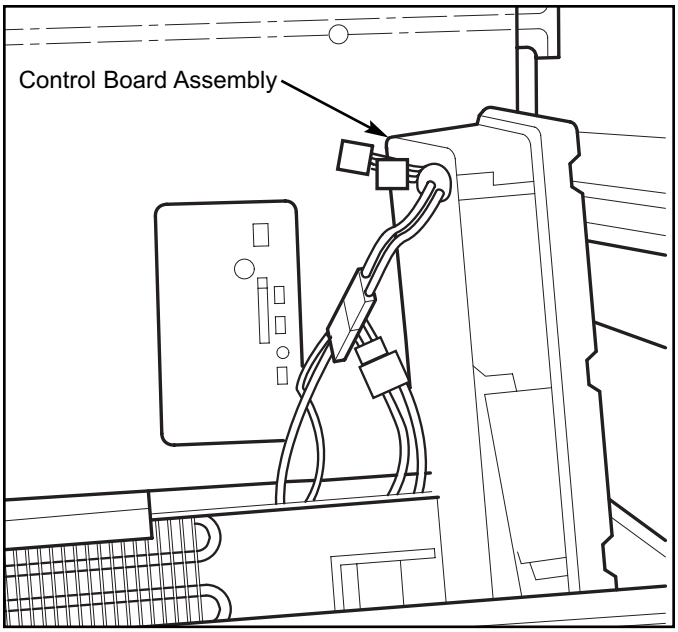


Figure 7-80. Control Board Assembly Removal

Back Air Duct Assembly Removal (All Base Units)

A back air duct assembly is held in place with screws that pass through the duct into screw grommet/stand-offs and one screw that passes through the duct into a grounding bracket.

To access and remove a back air duct assembly, first remove the drawers, drawer closers, drawer slides, Reed switches and sump cover. On a 700TR-2, the mullion divider assembly and mullion divider supports will also need to be removed, and on a 700BFI-2, the icemaker assembly will need to be removed.

Begin removing the back air duct by extracting the mounting screws. Remove the plastic nut that holds the Methode connector of the control wire harness to the duct. (See Figure 7-81) Lean the top of the air duct forward. On a model 700BR-2, reach behind the duct and disconnect the electrical leads from the baffle control. (See Figure 7-82) On a model 700BF/I-2, reach behind the duct and disconnect the electrical leads from the icemaker switch. Pull the air duct assembly out through the top drawer opening.

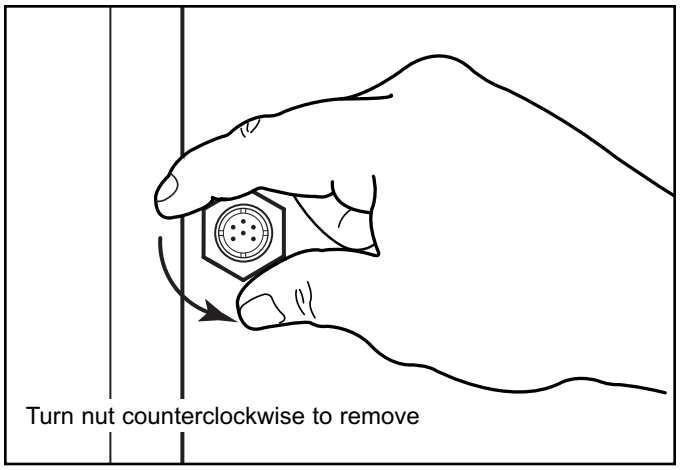


Figure 7-81. Remove Nut from Methode Connector

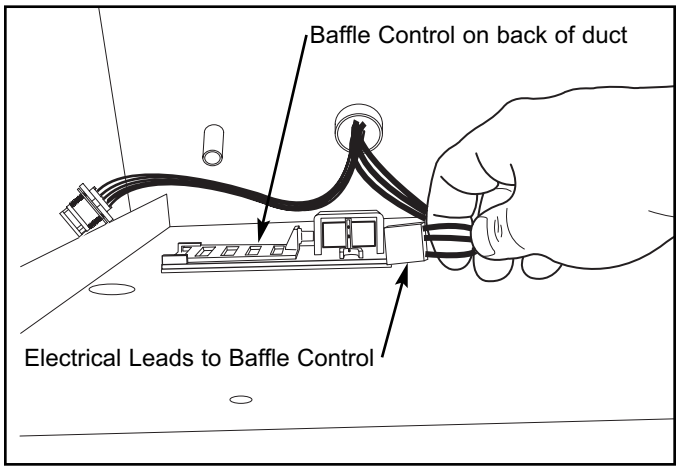


Figure 7-82. Unplug Baffle Control, BR-2

Baffle Control Removal (700BR-2 Only)

The baffle control in the 700BR-2 is attached to the back of the air duct with double stick tape.

To access and remove the baffle control, first remove the drawers, drawer closers, drawer slides, Reed switches, sump cover and back duct. Then, pry the baffle control off the back of the air duct with a chisel or similar tool. (See Figure 7-83)

NOTE: *Before installing the replacement baffle control, be sure to clean all tape residue from the area.*

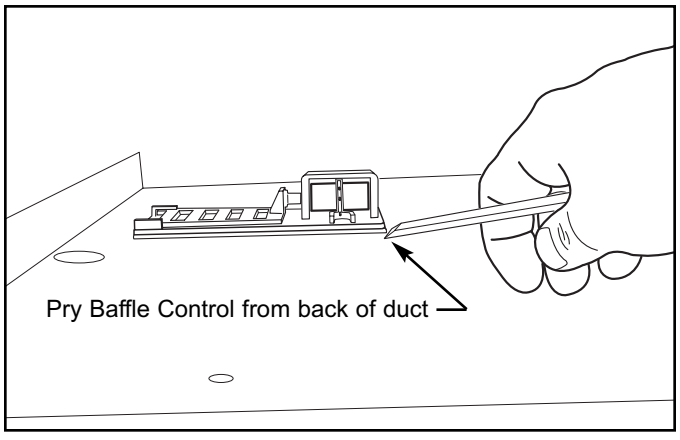


Figure 7-83. Baffle Control Removal, BR-2

Icemaker Switch Removal (700BFI-2 Only)

The icemaker switch in the 700BF/I-2 fits in a square hole in the back air duct, just below the icemaker. Tabs on the sides of the switch hold the switch in place.

To access and remove the icemaker switch, first remove the drawers, drawer closers, drawer slides, Reed switches, icemaker, sump cover and back duct. Then, depress the tab on the side of the switch and push the switch out from the hole. (See Figure 7-84)

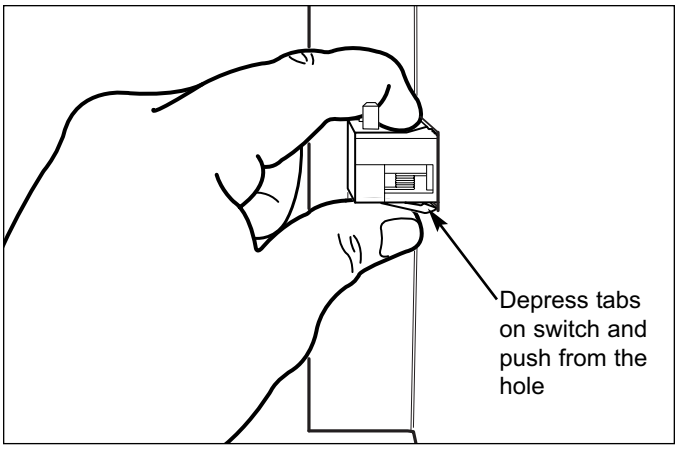


Figure 7-84. Icemaker Switch Removal, BF/I-2

Evaporator Fan Assembly Removal (All Base Units)

The side flanges of the evaporator fan assembly slide down into grooves in the fan shroud. The bottom of the evaporator fan assembly sits on a flange at the bottom of the fan shroud. (See Figure 7-85)

To access and remove the evaporator fan assembly, first remove the drawers, drawer closers, drawer slides, Reed switches sump cover and back duct. On a 700TR-2, the mullion divider assembly and mullion divider supports will also need to be removed, and on a 700BFI-2, the icemaker assembly will need to be removed. Then, unplug the fan assembly electrical leads and pull the assembly up out of the grooves in the fan shroud. (See Figure 7-86)

NOTE: *Do not attempt to remove the fan assembly without removing the back duct. Doing so will deform the back duct and cause air leaks around the air baffles.*

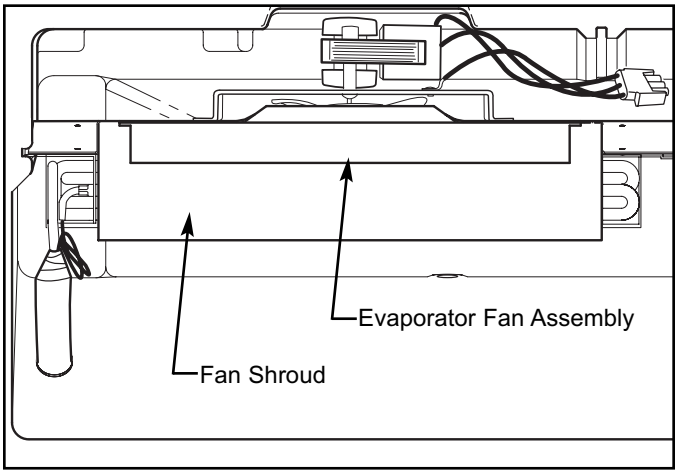


Figure 7-85. Evaporator Fan Assembly in Sump

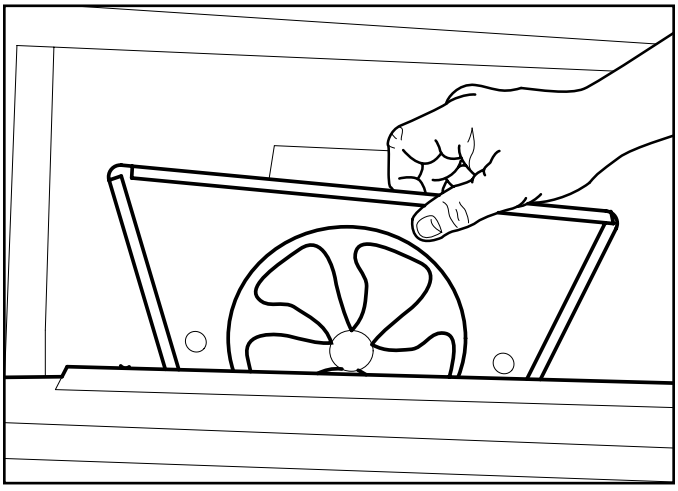


Figure 7-86. Evaporator Fan Assembly Removal

700-2 BASE UNIT COMPRESSOR AREA ELECTRICAL AND MECHANICAL COMPONENTS

Icemaker Water Valve Removal (700BFI-2 Only)

The icemaker water valve assembly on a 700BF/I-2 is attached to the valve bracket, which is located on the right side of the compressor area, in front of a fiberglass air baffle. A screw passing through a key-hole slot in the valve assembly secures the valve to the valve bracket.

NOTE: *It is not necessary to remove the compressor tray to access the water valve assembly.*

To access and remove the icemaker water valve, first turn off the water supply to the icemaker. Then, remove the kickplate/grille. With a wrench, disconnect the brass compression fitting which holds the water supply line to the water inlet stub. With a Phillips screwdriver, loosen the screw that secures the valve assembly to the valve bracket. Grab the water inlet stub and lift up so that the head of the screw lines up with the large section of the key-hole slot. Pull the valve assembly forward until the screw clears the key-hole slot, then lower the assembly down until the valve body clears the valve bracket and pull the assembly out from the compressor area. (See Figure 7-87) Now, unplug the electrical leads, and disconnect the outlet tube plastic compression fitting with a wrench. (See Figure 7-88)

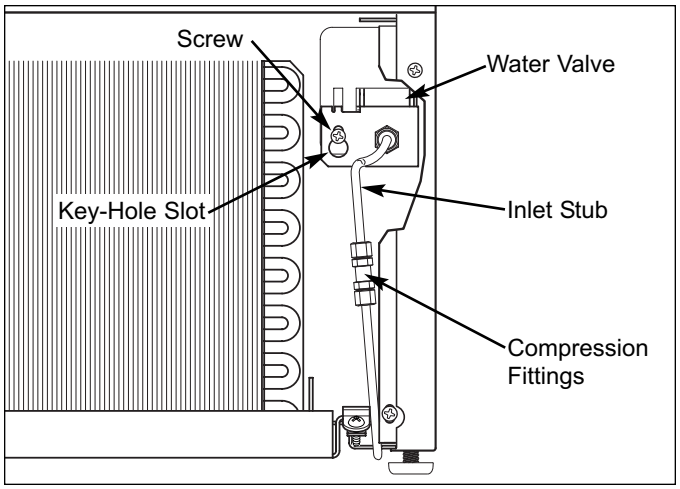


Figure 7-87. Water Valve Removal, BF/I-2

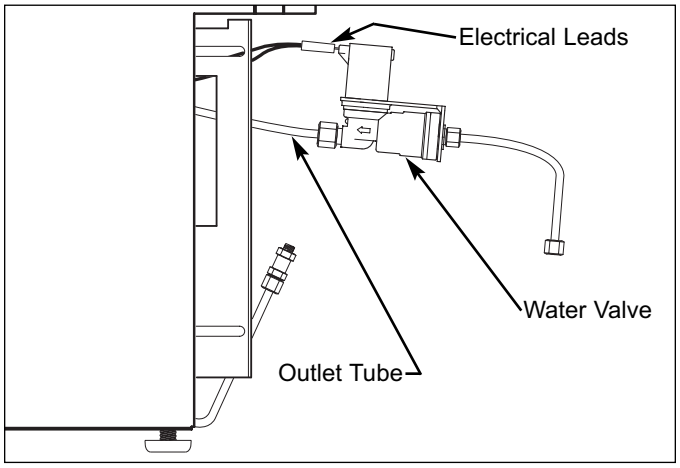


Figure 7-88. Disconnect Water Valve, BF/I-2

Condenser Fan Assembly Removal (All Base Units)

The condenser fan shroud sets on top of two pegs protruding from the unit tray and two screws at the top of the shroud secure it to the condenser. The condenser fan is mounted to the condenser fan shroud. Three fan mounting brackets are hooked into grommeted holes in the fan shroud. Screws passing through these brackets secure the fan motor to the brackets. The condenser fan blade is held onto the fan motor shaft with a nut.

To access and remove the condenser fan assembly, the kickplate/grille will need to be removed first and the unit tray will need to be slid out. To slide the unit tray out, extract the two screws that secure the tray to the unit, located at the front right and left corners. Grab the front flange of the tray and pull forward. (See Figure 7-89)

NOTE: *It may be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to access the condenser fan assembly.*

Begin removing the condenser fan assembly by disconnecting the condenser fan motor electrical leads. Extract the two screws at the top of the fan shroud and lift the shroud and motor up off of the pegs at the bottom. (See Figure 7-90)

To remove the condenser fan from the shroud, extract the three screws securing the motor to the brackets. The brackets will unhook from the grommeted holes in the condenser fan shroud after the screws are removed. (See Figure 7-90)

To remove the fan blade from the fan motor, grab the blade and motor while turning the nut counterclockwise. Then pull the blade from the motor shaft. (See Figure 7-91)

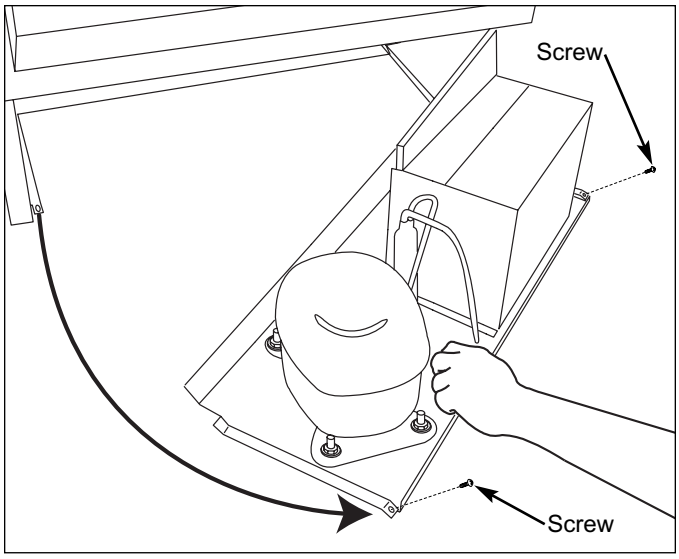


Figure 7-89. Sliding Unit Tray Out

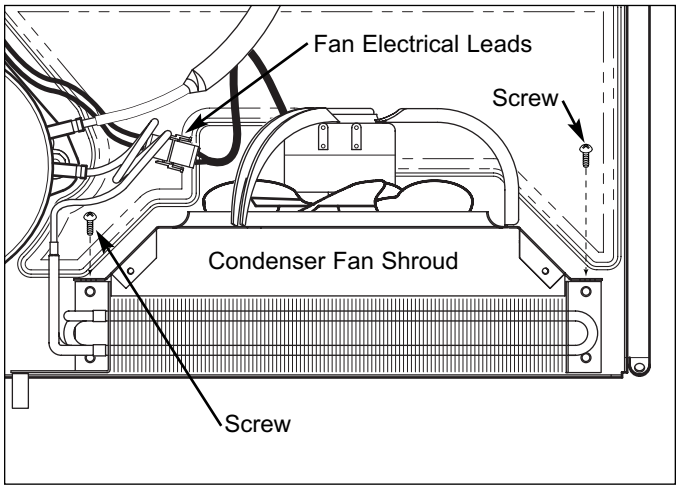


Figure 7-90. Condenser Fan Shroud Removal

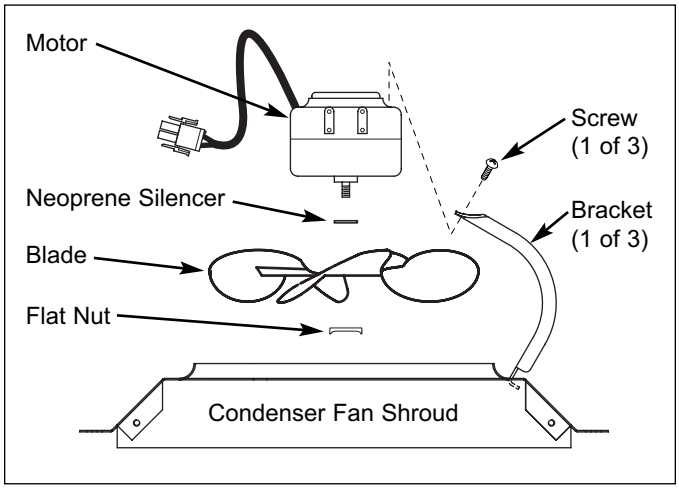


Figure 7-91. Condenser Fan Assembly

Drain Tube Heater Removal (700BF/I-2 Only)

The electrical connections for the 700BF/I-2 drain tube heater are located at the back of the compressor area with the heater leads entering the sump drain tube from the compressor area.

To access and remove the drain tube heater, the kick-plate/grille will need to be removed first and the unit tray will need to be slid out. To slide the unit tray out, extract the two screws that secure the tray to the unit, located at the front right and left corners. Grab the front flange of the tray and pull forward. (See Figure 7-92)

NOTE: *It may be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to access the drain tube heater.*

Unplug the drain tube heater electrical leads and pull the heater from the drain tube (See Figure 7-93).

NOTE: *When installing the replacement drain tube heater, push the heater leads into the sump drain tube until splices are 2-1/2" from drain tube outlet (See Figure 7-93). Also, it is recommended to remove the sump cover to make sure the drain tube heater has slid under the evaporator.*

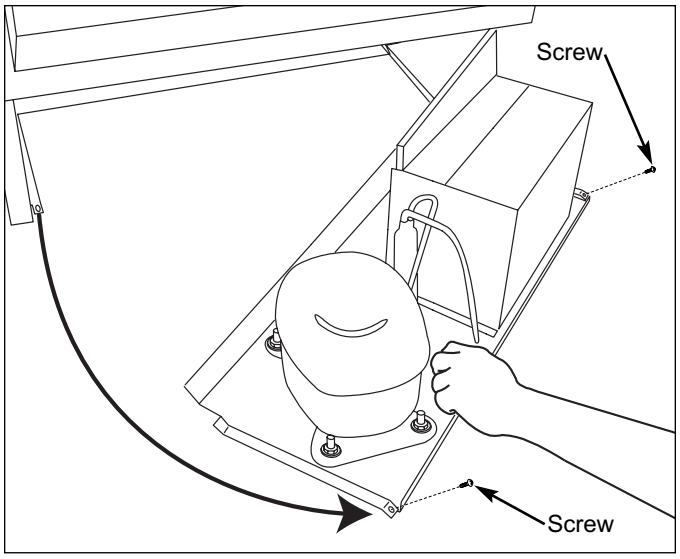


Figure 7-92. Sliding Unit Tray Out

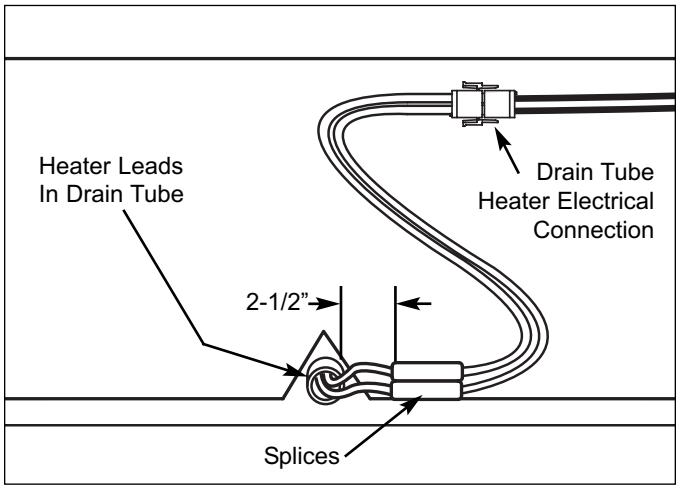


Figure 7-93. Drain Tube Heater in Compressor Area

700-2 BASE UNIT SEALED SYSTEM COMPONENTS

High-Side Filter-Drier Removal (All Base Units)

The high-side filter-drier is located to the right of the condenser and is attached to the condenser outlet tube with a cable tie.

NOTE: *Before attempting to remove a filter drier, evacuate the refrigerant from the sealed system.*

To access and remove a high-side filter-drier, the kick-plate/grille will need to be removed first and the unit tray will need to be slid out. To slide the unit tray out, extract the two screws that secure the tray to the unit, located at the front right and left corners. Grab the front flange of the tray and pull forward. (See Figure 7-94)

NOTE: *It may be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to access the filter-driers.*

Begin removing the filter-drier by cutting the cable tie which secures the filter-driers to the condenser outlet tube. With the edge of a file, score a line around the capillary tube approximately one inch from the filter-drier outlet, then fatigue the capillary tube at this line until it separates. With a tube cutter, cut the inlet tube approximately one inch from the filter-drier. (See Figure 7-95)

NOTE: *Sweating the joints apart is not recommended as this may induce moisture into the sealed system and could cause a solder restriction in the capillary tube.*

NOTE: *Check the end of the remaining capillary tube for internal burrs. If burrs exist, rescore a line around the capillary tube approximately one inch from the end and fatigue the capillary tube at this new line until it separates.*

NOTE: *When installing the replacement filter-drier, insert the capillary tube until it touches the screen, then pull the capillary tube approximately 3/8" away from the screen before brazing (See Figure 7-96). When installing a new filter-drier, be sure to thoroughly clean the tubing before brazing.*

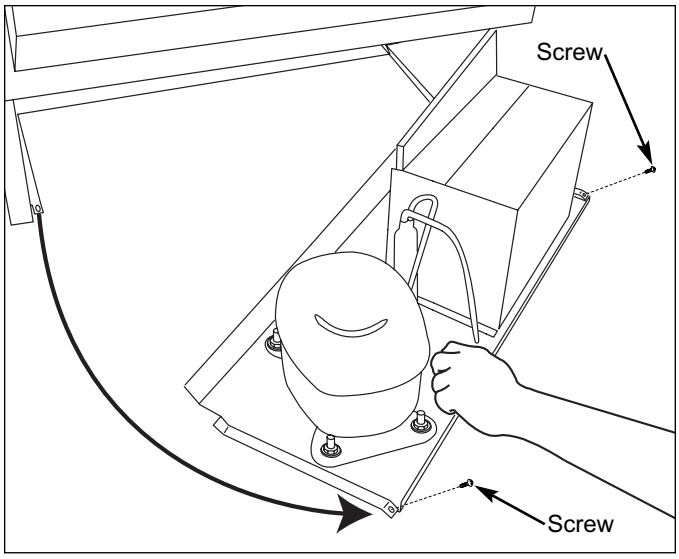


Figure 7-94. Sliding Unit Tray Out

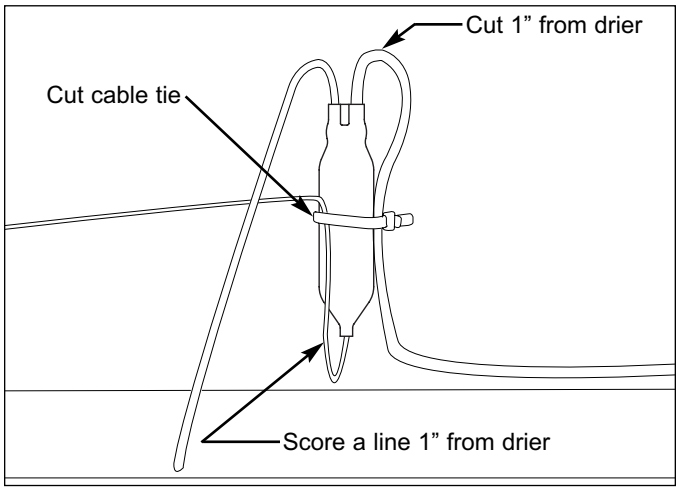


Figure 7-95. Filter-Drier Removal

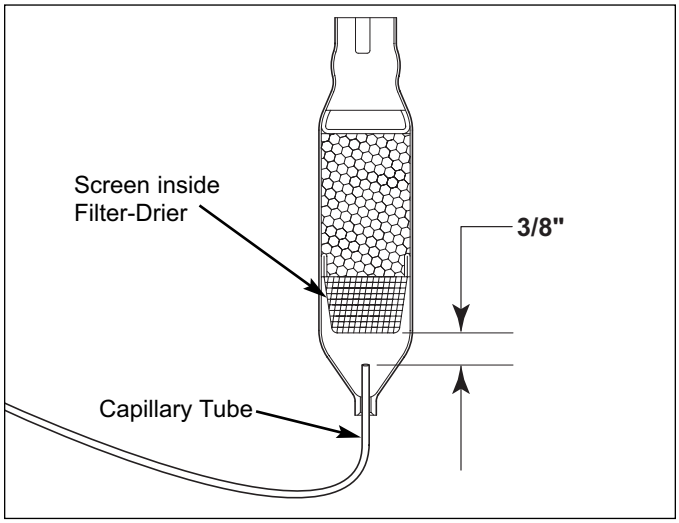


Figure 7-96. Filter-Drier Cut-Away View

Compressor Removal (All Base Units)

The compressor has four rubber compressor grommets inserted into its base. Cylindrical metal spacers are placed over threaded studs that are press fit to the unit tray. The compressor grommets fit over the spacers and a washer sets on top of the grommet and spacer. A nut is then installed on the threaded stud and tightened down on the washer and spacer.

NOTE: *Before attempting to remove a compressor, evacuate the refrigerant from the sealed system.*

To access and remove a compressor, the kickplate/grille will first need to be removed and the unit tray will need to be slid out. To slide the unit tray out, extract the two screws that secure the tray to the unit, located at the front right and left corners. Grab the front flange of the tray and pull forward. (See Figure 7-97)

After the tray is slid out, use a flat-blade screwdriver to remove the compressor electrical cover, then disconnect the the electrical leads from the compressor. (See Figure 7-98)

Begin removing the compressor by cutting the inlet and outlet tubing with a tube cutter, approximately one inch from the compressor ports. Extract the nuts and washers from the threaded studs, then lift the compressor off of the studs. (See Figure 7-99)

NOTE: *Sweating the joints apart is not recommended as this may induce moisture into the sealed system.*

NOTE: *The high-side filter-drier must be replaced whenever servicing the sealed system.*

NOTE: *When installing a compressor, be sure to thoroughly clean the tubing before brazing.*

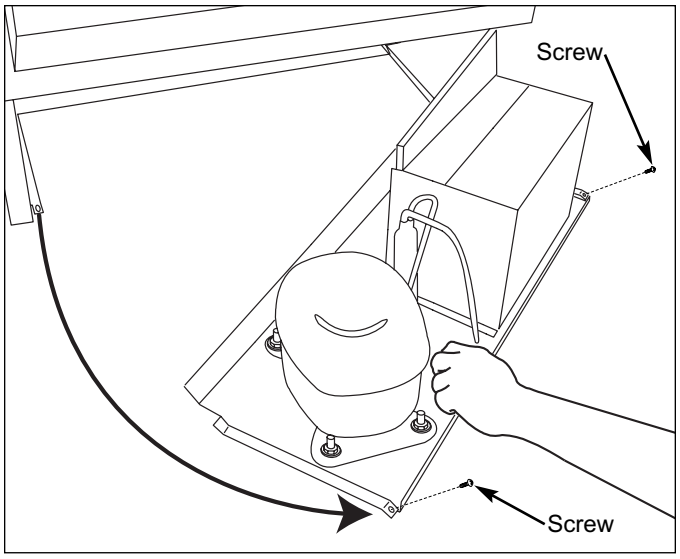


Figure 7-97. Sliding Unit Tray Out

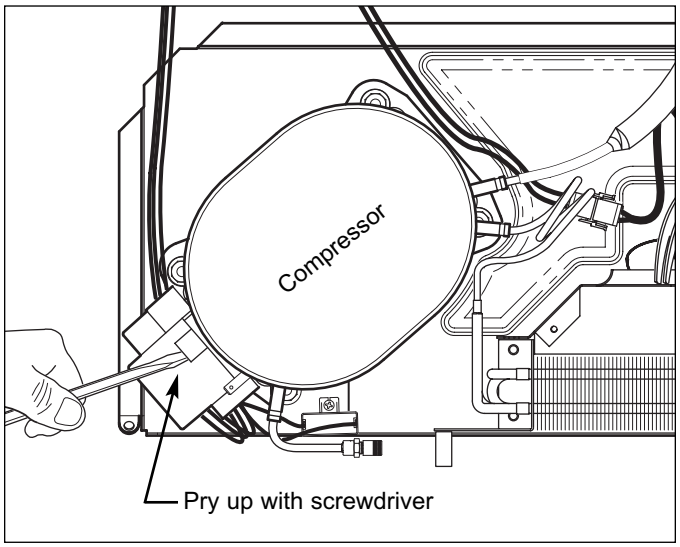


Figure 7-98. Removing Compressor Electrical Cap

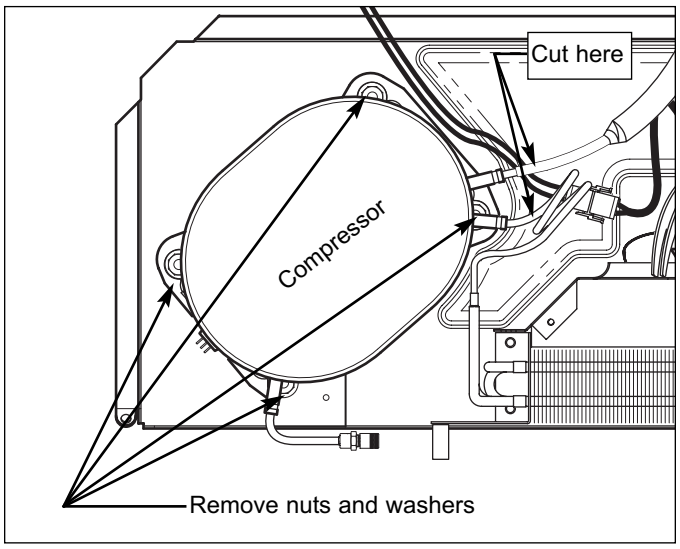


Figure 7-99. Compressor Removal

Condenser Removal (All Base Units)

The condenser is secured to the unit tray by four rivets that pass up through the unit tray into the condenser side brackets.

NOTE: *Before attempting to remove the condenser, evacuate the refrigerant from the sealed system.*

To access the condenser, the kickplate/grille will need to be removed first and the unit tray will need to be slid out. To slide the unit tray out, extract the two screws that secure the tray to the unit, located at the front right and left corners. Grab the front flange of the tray and pull forward. (See Figure 7-100)

NOTE: *It will be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to remove the condenser.*

Begin removing the condenser by cutting the inlet and outlet tubes to and from the condenser, approximately one inch from the weld joints. Then, prop the front of the unit tray up and drill out the four rivets securing the condenser to the tray. (See Figure 7-101)

NOTE: *Sweating the joints apart is not recommended as this may induce moisture into the sealed system.*

NOTE: *The high-side filter-drier must be replaced whenever replacing the condenser.*

NOTE: *To reattach the condenser to the unit tray, use #10-24 X 3/8" bolts (#6200020) passing up through the unit tray and condenser brackets with #10-24 Hex nuts (#6150030) tightened down on top.*

NOTE: *When installing the replacement condenser, be sure to thoroughly clean the tubing before brazing.*

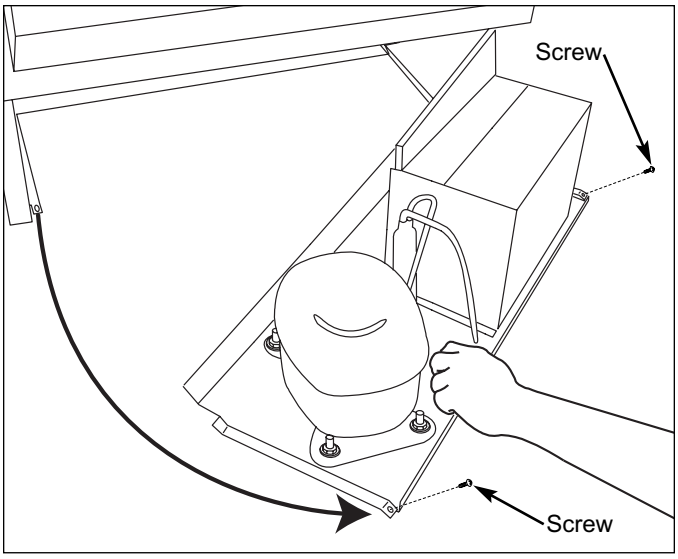


Figure 7-100. Sliding Unit Tray Out

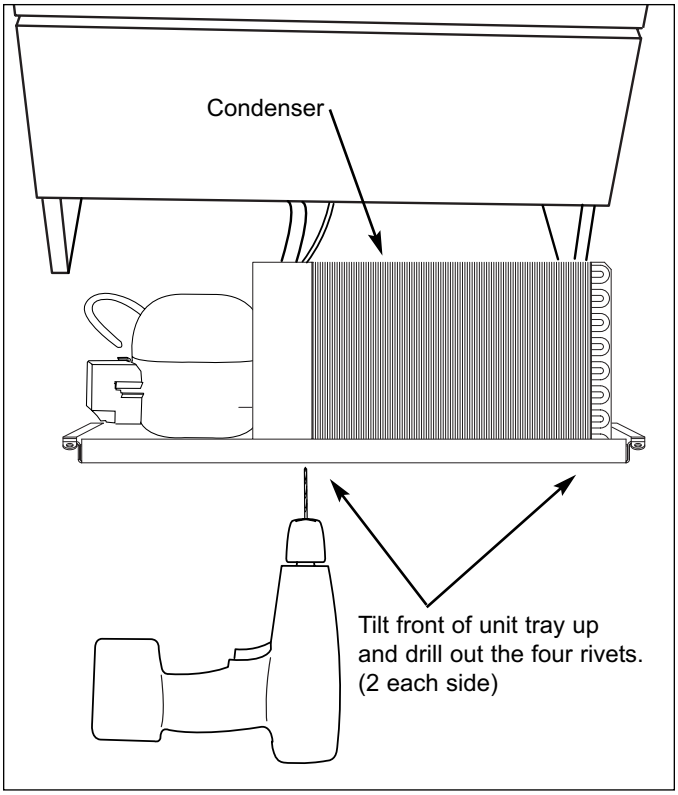


Figure 7-101. Condenser Removal

Evaporator / Heat Exchanger Assembly Removal (All Base Units)

The evaporator / heat exchanger assembly was installed into the unit by inserting the heat exchanger down through the hole at top left front of the sump. As the heat exchanger is fed through the hole, the side brackets of the evaporator slide down into channels in the sump and the control board enclosure. The tubing insulation is then installed over the heat exchanger before it is coiled and attached to the back of the unit tray area with a P-clamp and screw. At the unit tray, the heat exchanger is attached to the compressor and filter-drier.

NOTE: *Before attempting to remove the evaporator / heat exchanger assembly, evacuate the refrigerant from the sealed system.*

To access and remove the evaporator / heat exchanger assembly, first remove the drawers, drawer closers, drawer slides, Reed switches, sump cover and back duct. On a 700TR-2, the mullion divider assembly and mullion divider supports must also be removed, and on a 700BFI-2, the icemaker assembly must be removed. Since the evaporator / heat exchanger assembly being removed will be scrapped, use a tin snips or similar tool to cut the heat exchanger near the hole in the sump. (See Figure 7-102) Disconnect all electrical leads of the components attached to the evaporator and lift the evaporator from the sump.

NOTE: *You may see a Y-harness between the evaporator thermistor electrical connections, with wires exiting through the heat exchanger hole in the sump. This is for factory test purposes and it can be removed or bypassed.*

To remove the rest of the heat exchanger, the kickplate will need to be removed and the unit tray will need to be slid out. To slide the unit tray out, extract the two screws that secure the tray to the unit, located at the front right and left corners. Grab the front flange of the tray and pull forward. (See Figure 7-100 on previous page)

NOTE: *It will be necessary to disconnect the compressor electrical leads in order to pull the tray out far enough to remove the heat exchanger.*

Cut the suction line approximately 2” from the compressor. (See Figure 7-103) Since the filter-drier will be replaced at the same time, cut the drier inlet tube approximately one inch from the drier, leaving the capillary tube attached. (See Figure 7-104) Extract the screw which holds the heat exchanger and P-clamp to the rear of the unit tray area. Pull the heat exchanger down through the hole at top left front of the sump and out of the unit tray area.

NOTE: *When installing the replacement evaporator / heat exchanger assembly, be sure to thoroughly clean the tubing before brazing.*

NOTE: *After installing the replacement evaporator / heat exchanger assembly, apply a bead of silicone around the heat exchanger where it exits through the hole in the sump.*

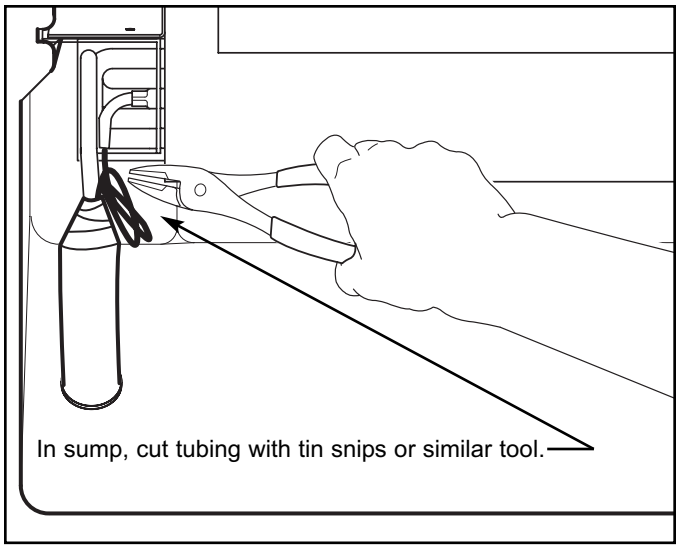


Figure 7-102. Cut Suction & Capillary Tube at Evap.

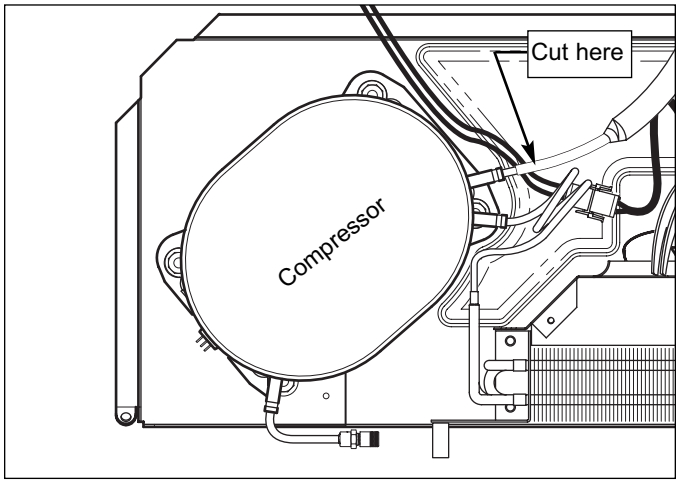


Figure 7-103. Cut Suction line at compressor

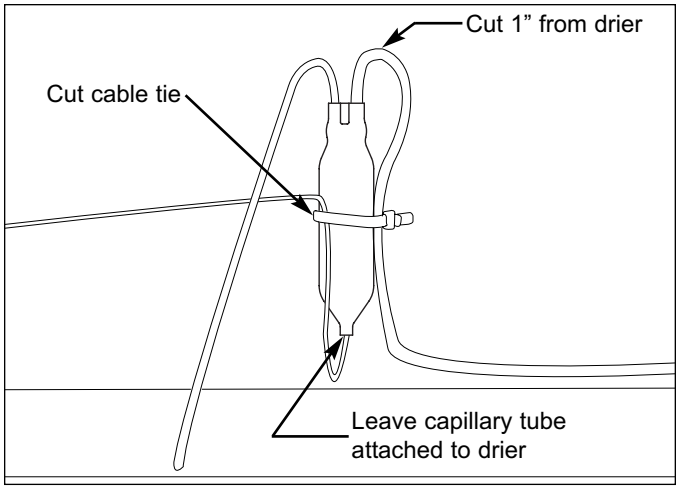


Figure 7-104. Cut Inlet at Filter-Drier

SECTION 8

TROUBLESHOOTING GUIDES

TROUBLESHOOTING GUIDES

This section of the manual contains:

- The Error Code Table and the Error Code Troubleshooting Guide.
  NOTE: *Error Codes were incorporated into the electronic control system after serial #1759493 (700TC/I-2), #1759163 (700TR-2) and #1757258 (700TF/I-2 & 700TF/I-2V). The Error Code table below and the Error Code Troubleshooting Guide apply to units after these serial numbers only, unless the control board has been changed during a service call.*
- The General Troubleshooting Guide, covers all problems that an Integrated (700-2) Series unit may experience.
- The Membrane Switch/Ribbon Cable Test Procedures, used to determine if a control panel assembly is defective.
- The Door Hinge Test Procedures and Corrections explain how to test and correct door closing problems.

HOW TO USE THE ERROR CODE TROUBLESHOOTING GUIDE

Error Codes are registered because of thermistor errors, defrost system errors or 700TF/I-2V variable speed compressor control system errors. These types of errors can lead to temperature problems. If Error Codes are registered, they will appear when Diagnostic Mode is initiated.

NOTE: *If Error Codes appear with a flashing "SERVICE" annunciator prior to initiating Diagnostic Mode, the unit experienced excessive compressor run condition that may or may not be associated with the Error Codes displayed.*

To initiate Diagnostic Mode, press and hold either COLDER key, then press the UNIT ON/OFF key, then release both keys. Now, check to see if Error Codes are present, being sure to toggle through all error and temperature readings by pressing either COLDER key or either WARMER key. (See Error Code Table Below)

If Error Codes appear during Diagnostic Mode, follow the Error Code Troubleshooting Guide on the following page. The left column of the troubleshooting guide lists the error codes. The information in the right column explains what tests to perform and/or what action to take to correct the error.

NOTE: *If error codes are observed in diagnostic mode, a non-flashing SERVICE annunciator will appear on the LCD when Diagnostic Mode ends, indicating error codes are still registered. Error Codes must be cleared from the electronic control memory manually. To clear the non-flashing SERVICE annunciator and the error codes, the problem must be corrected and the unit must be ON. Then, press and hold the Door Ajar Alarm Bell ON/OFF key for 15 seconds. The control will emit a short "beep" when the SERVICE annunciator and error codes are cleared.*

Error Code Table	
CODE	**INDICATION**
05	***Refrig. cabinet thermistor read open or shorted for 10+ seconds, or repeatedly read erratic temp's***
06	***Refrig. evaporator thermistor read open or shorted for 10+ seconds, or repeatedly read erratic temp's***
07	***Freezer cabinet thermistor read open or shorted for 10+ seconds, or repeatedly read erratic temp's***
08	***Freezer evaporator thermistor read open or shorted for 10+ seconds, or repeatedly read erratic temp's***
20	***Defrost under-heat with no voltage feedback through Gray/White wire at defrost start***
21	***Defrost overheat***
22	***No voltage feedback through Gray/White wire at defrost start***
23	***Defrost overheat with no voltage feedback through Gray/White wire at defrost start***
24	***Defrost under-heat***
80	***High VS compressor differential pressure or low voltage supplied to VS compressor***
81	***High amperage draw at VS compressor***
82	***VS compressor could not maintain lowest minimum speed at highest current draw***
83	***Locked VS compressor rotor***
84	***Short circuit at VS compressor controller output circuit***
85	***VS compressor converter overheated and shut down VS compressor***
86	***Serial communication failure between VS compressor controller and electronic control board***
87	***Speed information from electronic control board is out of specification***
88	***Electronic control board not receiving status data in response to speed commands***

ERROR CODE TROUBLESHOOTING GUIDE

EC	TEST / ACTION
05	A. If "EE" for refrigerator compartment was displayed and "SERVICE" flashing, check the following: 1. Thermistor electrical connections and continuity from thermistor to J1 on control board. Reconnect / repair. 2. Resistance of thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective. B. If "EE" for refrigerator compartment was NOT displayed, problem is intermittent thermistor error or caused by over-heating (above 116°F), check the following: 1. Door not closing properly. Correct door closing problem. 2. Fan switch, light switch, wiring & electrical connections. Repair wiring / connections or replace switch. 3. Thermistor electrical connections and continuity from thermistor to J1 on control board. Reconnect / repair. 4. Resistance of thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective. C. If "EC 05" and "SERVICE" were flashing before initiating diagnostic mode, unit also experienced excessive compressor run condition that may or may not be associated with the "05" Error Code. See problems C & E in General Troubleshooting Guide.
06	A. Initiate Diagnostic Mode. If "EE" is displayed for refrigerator evaporator thermistor, check the following: 1. Thermistor electrical connections and continuity from thermistor to J1 on control board. Reconnect / repair. 2. Resistance of thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective. B. Initiate Diagnostic Mode. If "EE" is NOT displayed for refrigerator evaporator thermistor, problem is intermittent thermistor error or caused by over-heating (above 116°F), check the following: 1. Door not closing properly. Correct door closing problem. 2. Fan switch, light switch, wiring & electrical connections. Repair wiring / connections or replace switch. 3. Thermistor electrical connections and continuity from thermistor to J1 on control board. Reconnect / repair. 4. Resistance of thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective. C. If "EC 06" and "SERVICE" were flashing before initiating diagnostic mode, unit also experienced excessive compressor run condition that may or may not be associated with the "06" Error Code. See problems C & E in General Troubleshooting Guide.
07	A. If "EE" for freezer compartment was displayed and "SERVICE" flashing, check the following: 1. Thermistor electrical connections and continuity from thermistor to J1 on control board. Reconnect / repair. 2. Resistance of thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective. B. If "EE" for freezer compartment was NOT displayed, problem is intermittent thermistor error or caused by over-heating (above 116°F), check the following: 1. Door not closing properly. Correct door closing problem. 2. Fan switch, light switch, wiring & electrical connections. Repair wiring / connections or replace switch. 3. Proper mounting and location of freezer compartment thermistor. Remount correctly. 4. Defrost terminator. Replace if defective. 5. Thermistor electrical connections and continuity from thermistor to J1 on control board. Reconnect / repair. 6. Resistance of thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective. C. If "EC 07" and "SERVICE" were flashing before initiating diagnostic mode, unit also experienced excessive compressor run condition that may or may not be associated with the "07" Error Code. See problems A & E in General Troubleshooting Guide.
08	A. Initiate Diagnostic Mode. If "EE" is displayed for freezer evaporator thermistor, check the following: 1. Thermistor electrical connections and continuity from thermistor to J1 on control board. Reconnect / repair. 2. Resistance of thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective. B. Initiate Diagnostic Mode. If "EE" is NOT displayed for freezer evaporator thermistor, problem is intermittent thermistor error or caused by over-heating (above 116°F), check the following: 1. Door not closing properly. Correct door closing problem. 2. Fan switch, light switch, wiring & electrical connections. Repair wiring / connections or replace switch. 3. Proper mounting and location of freezer evaporator thermistor. Remount correctly. 4. Proper operation of defrost terminator (Cut-in 30°F/Cut-out 70°F). Replace if defective. 5. Thermistor electrical connections and continuity from thermistor to J1 on control board. Reconnect / repair. 6. Resistance of thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective. C. If "EC 08" and "SERVICE" were flashing before initiating diagnostic mode, unit also experienced excessive compressor run condition that may or may not be associated with the "08" Error Code. See problems A & E in General Troubleshooting Guide.

NOTE: *After repairs, always clear Error Codes by pressing Bell ON/OFF key for 15 seconds.*

ERROR CODE TROUBLESHOOTING GUIDE

NOTE: *Error Codes 80 to 88 apply to the model 700TF/I-2V only.*

EC	TEST / ACTION
20	A. With cold evap. (< 10°F), initiate Manual Defrost, then initiate Diagnostic Mode (press UNIT ON/OFF key every 20 seconds to keep in Diagnostic Mode) and observe evap. temp. If temp. exceeds 45°F and defrost lasts longer then 5 minutes (longer then 10 minutes in 700TF/I-2V), error code is false. Clear error code. If error code is not false: 1. Check continuity of Grey/White wire from defrost heater to J4-4 on control board. Reconnect / repair Grey/White wire. 2. While in defrost, check for 115V AC at E2 on control board. If no voltage, replace board. 3. Check continuity of Blue wire from defrost terminator to E2 on control board. Reconnect / repair Blue wire. 4. Check resistance of defrost heater (see wire diagram for proper resistance). Replace heater if defective. 5. Check electrical connections and operation of defrost terminator (Cut-in 30°F/Cut-out 70°F). Reconnect / repair or replace terminator. 6. Reference wiring diagram to identify components in same White wire circuit as defrost heater. Check all White wire electrical connections and continuity from defrost heater to J7-8 on control board.
21	A. With cold evap. (< 10°F), initiate Manual Defrost, then initiate Diagnostic Mode (press UNIT ON/OFF key every 20 seconds to keep in Diagnostic Mode) and observe evap. temp. If temp. does <u>not</u> exceed 105°F, error code is false. Clear error code. If error code is not false: 1. Check Blue wire connection at control board (E2). If connected to wrong pin, connect correctly. 2. Check Grey/White wire connection at control board (J4-4). if connected wrong or bad connection, reconnect / repair. 3. Check for proper mounting & location of evap. thermistor, defrost heater & terminator. Remount correctly. 4. Check for electrical short of Blue wire to another circuit. Repair Blue wire &/or electrical connections. 5. Check operation of defrost terminator (Cut-in 30°F / Cut-out 70°F). Replace if defective.
22	A. With cold evap. (< 10°F), initiate Manual Defrost. If compressor starts 5 minutes (10 minutes in 700TF/I-2V) after defrost is initiated, check Grey/White wire and continuity from defrost heater to J4-4 on control board. Reconnect / repair Grey/White wire.
23	A. With cold evap. (< 10°F), initiate Manual Defrost. If compressor starts 5 minutes (10 minutes in 700TF/I-2V) after defrost is initiated, check Grey/White wire connections and continuity from defrost heater to J4-4 on control board. Reconnect / repair Grey/White wire. B. Check for proper mounting and location of evap. thermistor, defrost heater & terminator. Remount correctly. C. Check Blue wire connection at control board (E2). If connected to wrong pin, connect correctly. D Check for electrical short of Blue wire to another circuit. Repair Blue wire &/or electrical connections.
24	A. With cold evap. (< 10°F), initiate Manual Defrost, then initiate Diagnostic Mode (press UNIT ON/OFF key every 20 seconds to keep in Diagnostic Mode) and observe evap. temp. If temp. exceeds 45°F, error code is false. Clear error code. If error code is not false: 1. Check Blue wire connection at control board (E2). If connected to wrong pin, connect correctly. 2. Verify proper location of Grey/White wire at control board (J4-4). if connected wrong or bad connection, reconnect / repair. 3. Check for proper mounting & location of evap. thermistor, defrost heater & terminator. Remount correctly.
80	A. If unit is NOT experiencing cooling problems, clear error code. B. If unit is experiencing cooling problems: 1. Check for 100 - 120 Volts AC to unit / electronic control board. If below 100 Volts AC, instruct customer to contact Electrician or power company. If proper voltage, see “2” below. 2. Check for 100 - 120 Volts AC to VS Compressor Controller. a. If below 100 Volts AC, check wiring and electrical connections between electronic control board and VS Compressor controller. If wiring and electrical connections are good, replace electronic control board. b. If proper voltage, initiate Manual Component Activation Mode to energize compressor. 1. If compressor will not start, replace VS Compressor Controller. 2. If compressor starts, but will not stay running, check for restrictions in sealed system. 3. If compressor runs, reference *“POINTERS”* in left column under problems A & B in General Troubleshooting Guide.

NOTE: *After repairs, always clear Error Codes by pressing Bell ON/OFF key for 15 seconds.*

ERROR CODE TROUBLESHOOTING GUIDE

NOTE: *Error Codes 80 to 88 apply to the model 700TF/I-2V only.*

EC	TEST / ACTION
81	A. If unit is NOT experiencing cooling problems, clear error code. B. If unit is experiencing cooling problems, initiate Manual Component Activation Mode to energize compressor: 1. If compressor will not start, replace VS Compressor Controller. 2. If compressor starts, but will not stay running, check for restrictions in sealed system. 3. If compressor runs, reference *"POINTERS"* in left column under problems A & B in General Troubleshooting Guide.
82	A. If unit is NOT experiencing cooling problems, clear error code. B. If unit is experiencing cooling problems, initiate Manual Component Activation Mode to energize compressor: 1. If compressor will not start, replace VS Compressor Controller. 2. If compressor starts, but will not stay running, check for restrictions in sealed system. 3. If compressor runs, reference *"POINTERS"* in left column under problems A & B in General Troubleshooting Guide.
83	A. If unit is NOT experiencing cooling problems, clear error code. B. If unit is experiencing cooling problems, replace compressor and high-side filter-drier.
84	A. If unit is NOT experiencing cooling problems, clear error code. B. If unit is experiencing cooling problems, check wiring and electrical connections between VS Compressor controller and Compressor. If wiring and electrical connections are good, replace VS compressor controller.
85	A. If unit is NOT experiencing cooling problems, clear error code. B. If unit is experiencing cooling problems: 1. Check cleanliness of condenser. Clean if needed. 2. Check condenser fan operation and electrical connections. Repair connections or replace fan. 3. If condenser airflow is good, replace VS compressor controller.
86	A. If unit is NOT experiencing cooling problems, clear error code. B. If unit is experiencing cooling problems: 1. Check serial communication wire leads for proper connection orientation at electronic control board and VS compressor controller. 2. Check for damaged or disconnected serial communication wire leads between electronic control board and VS compressor controller. Repair or replace wiring / connections. 3. If wiring and electrical connections are good, replace electronic control board and VS compressor controller.
87	A. If unit is NOT experiencing cooling problems, clear error code. B. If unit is experiencing cooling problems: 1. Check serial communication wire leads for proper connection orientation at electronic control board and VS compressor controller. 2. Check for damaged or disconnected serial communication wire leads between electronic control board and VS compressor controller. Repair or replace wiring / connections. 3. If wiring and electrical connections are good, replace electronic control board and VS compressor controller.
88	A. If unit is NOT experiencing cooling problems, clear error code. B. If unit is experiencing cooling problems: 1. Check serial communication wire leads for proper connection orientation at electronic control board and VS compressor controller. 2. Check for damaged or disconnected serial communication wire leads between electronic control board and VS compressor controller. Repair or replace wiring / connections. 3. If wiring and electrical connections are good, replace electronic control board and VS compressor controller.

NOTE: *After repairs, always clear Error Codes by pressing Bell ON/OFF key for 15 seconds.*

HOW TO USE THE GENERAL TROUBLESHOOTING GUIDE

The table on page 9-8 indicate how the General Trouble Shooting Guide is arranged. Letters “A” through “X” pertain to the Tall units, letters “AA” through “TT” pertain to Base units. Identify the description of the problem that the unit is experiencing from the table. To the left of the problem description is a letter. Locate that letter in the left column of the General Troubleshooting Guide. The center column will identify the possible causes for the problem. The information in the right column explains the tests to perform and/or action to take to correct the problem. If the unit is experiencing temperature problems, refer to the instructions below before beginning troubleshooting.

For Tall Unit Temperature Problems - *Prior to Serial #1759493 (700TC/I-2), #1759163 (700TR-2) and #1757258 (700TF/I-2 & 700TF/I-2V)*

1. Begin troubleshooting by observing compartment set points.
2. If set-points are normal, initiate Diagnostic Mode by pressing and holding either COLDER key, then press UNIT ON/OFF key, then release both keys.

   NOTE: *Diagnostic Mode will end twenty seconds after the last key stroke.*
3. Toggle to and observe appropriate evaporator temperature. (See Thermistor Location Code Tables on following page.)

   NOTE: *Verify compressor is operating before observing evaporator temperature. If problem is in a refrigerator section, refrigerator door must be left open for 5 minutes with compressor running.*
4. After observing evaporator temperature as instructed above, take note of *“Pointers”* in first column of troubleshooting guide under problems “A” through “D”. The *“Pointers”* list what possible causes to check based on evaporator temperature observed.

NOTE: *If compartment temperature history is needed to help diagnose the problem, initiate Temperature Log Recall Mode. Begin with the unit ON. Now, press and hold the desired compartment WARMER key, then press the UNIT ON/OFF key, then release both keys. Toggle through the indexes by pressing the WARMER or COLDER key.*

For Tall Unit Temperature Problems - *Starting with Serial #1759493 (700TC/I-2), #1759163 (700TR-2) and #1757258 (700TF/I-2 & 700TF/I-2V)*

1. Begin troubleshooting by observing compartment set points.
2. If set-points are normal, initiate Diagnostic Mode by pressing and holding either COLDER key, then press UNIT ON/OFF key, then release both keys.

   NOTE: *Diagnostic Mode will end twenty seconds after the last key stroke.*
3. When Diagnostic Mode is initiated, check to see if “Error Codes” are present, being sure to toggle through all error codes and temperature readings by pressing either COLDER key or either WARMER key. (See Thermistor Location Code Tables on following page.)
4. If Error Codes are present, refer to Error Code Troubleshooting Guide on previous pages.
5. If there are no Error Codes, initiate Manual Component Activation Mode (which lasts for 5 minutes) by pressing and holding desired compartment COLDER and UNIT ON/OFF keys for 10 seconds, then observe evaporator temperatures.

   NOTE: *Verify that compressor is operating before observing evaporator temperatures. If problem is in a refrigerator section, refrigerator door must be left open for 5 minutes with compressor running.*
6. After observing evaporator temperature as instructed above, take note of *“Pointers”* in first column of the troubleshooting guide under problems “A” through “D”. The *“Pointers”* list what possible causes to check based on evaporator temperature observed.

NOTE: *If compartment and/or evaporator temperature history is needed to help diagnose the problem, initiate Temperature Log Recall Mode. Begin with the unit ON and in Diagnostic Mode.* While in Diagnostic Mode, toggle through the readings until the desired thermistor temperature is displayed on the LCD. Now, press the WARMER key for that compartment and the UNIT ON/OFF key simultaneously. *Toggle through the indexes by pressing the WARMER or COLDER key.*

For Base Unit Temperature Problems - Regardless of Serial Number

1. Begin troubleshooting by observing compartment set points.
2. If set-points are normal, initiate Diagnostic Mode by pressing and holding either COLDER key, then press UNIT ON/OFF key, then release both keys.

   NOTE: *Diagnostic Mode will end twenty seconds after the last key stroke.*
3. Toggle to and observe appropriate evaporator temperature. (See Thermistor Location Code Tables on following page.)

   NOTE: *Verify compressor is operating before observing evaporator temperature. If problem is in a refrigerator section, refrigerator door must be left open for 5 minutes with compressor running.*
4. After observing evaporator temperature as instructed above, take note of *"Pointers"* in first column of troubleshooting guide under problems "AA" and "BB". The *"Pointers"* list what possible causes to check based on evaporator temperature observed.

Thermistor Location Code Tables

700TC/I-2	
THERMISTOR LOCATION	**CODE**
Freezer Compartment	***F***
Refrigerator Compartment	***r***
Freezer Evaporator	***FE***
Refrigerator Evaporator	***rE***

700TR-2	
THERMISTOR LOCATION	**CODE**
Lower Compartment	***L***
Upper Compartment	***U***
Lower Evaporator	***LE***
Upper Evaporator	***UE***

700TF/I-2	
THERMISTOR LOCATION	**CODE**
Freezer Compartment	***F***
Freezer Evaporator	***FE***

700TF/I-2V	
THERMISTOR LOCATION	**CODE**
Compressor Speed	***SP***
Freezer Compartment	***F***
Freezer Evaporator	***FE***

700BR-2	
THERMISTOR LOCATION	**CODE**
Lower Compartment	***L***
Upper Compartment	***U***
Evaporator	***E***

700BF/I-2	
THERMISTOR LOCATION	**CODE**
Freezer Compartment	***F***
Evaporator	***E***

GENERAL TROUBLESHOOTING GUIDE LAYOUT

Page #

Tall Units - A through X

A. Warm Freezer Compartment Temp. with **"SERVICE"** Flashing on the LCD 8-9
B. Warm Freezer Compartment Temp. without "SERVICE" Flashing on the LCD 8-11
C. Warm Refrigerator Compartment Temp. with **"SERVICE"** Flashing on the LCD 8-13
D. Warm Refrigerator Compartment Temp. without "SERVICE" Flashing on the LCD 8-14
E. Warm or Normal Temp. in Both Compartment with **"SERVICE"** Flashing on the LCD 8-15
F. Warm or Normal Temp. in One or Both Compartment with **"SERVICE"** Flashing and **"EC"** on the LCD 8-16
G. Warm or Normal Temp. in One or Both Compartment with **"SERVICE"** steady, but not Flashing on the LCD 8-16
H. Warm Temp. in Both Compartments without "SERVICE" Flashing on the LCD 8-16
I. Warm or Normal Freezer Compartment with **"EE"** Displayed for Freezer Temp. and **"SERVICE"** Flashing 8-16
J. Warm or Normal Refrigerator Compartment with **"EE"** Displayed for Refrig. Temp. and **"SERVICE"** Flashing 8-17
K. Product Temp. 10° or More Colder than Displayed Temp. 8-17
L. 1. Extremely" Cold Temp. Displayed - (1° to 7° in Refrigerator and -21° to -15° in Freezer) 8-17
2. If outside U.S. - "Extremely" Warm Temp. Displayed - (34° to 45° in Refrig. and -5° to 5° in Freezer) 8-17
M. No Ice with **"ICE"** and **"SERVICE"** Flashing on LCD 8-17
N. No Ice, "ICE" Displayed on LCD, but not Flashing 8-17
O. No Ice, "ICE" not Displayed on LCD 8-18
P. Too Much Ice 8-18
Q. Icemaker Produces Hollow Cubes 8-19
R. Icemaker Produces Small Cubes 8-19
S. Water in Ice Bucket / Clump of Ice in Ice Bucket 8-19
T. Membrane Switch on Control Board Malfunctioning 8-19
U. No Lighting 8-20
V. Lights Stay on When Door and/or Drawers Are Closed (May be Accompanied by Door/Drawer Ajar Alarm Bell) 8-20
W. Door or Drawers Not Able to Close Completely 8-20
X. Door or Drawers Uneven 8-21

Base Units - AA through TT

AA. Warm Freezer Temp. in BF/I-2 without "SERVICE" Flashing on the LCD 8-22
BB. Warm Refrigerator Temp. in Both Drawers of BR-2 without "SERVICE" Flashing on the LCD 8-24
CC. Warm or Normal Refrigerator Temp. in Both Drawers of BR-2 with **"SERVICE"** Flashing on the LCD 8-25
DD. Warm or Normal Freezer Temp. in BF/I-2 with **"EE"** Displayed and **"SERVICE"** Flashing 8-25
EE. Warm or Normal Refrig. Temp. in both drawers of BR-2 with **"EE"** Displayed and **"SERVICE"** Flashing 8-26
FF. Warm or Normal Temp's in BF/I-2 or BR-2 with **"E0"** or **"E3"** Displayed 8-26
GG. Warm Temp. in Lower Drawer Only of BR-2 without "SERVICE" Flashing on the LCD 8-26
(OR) Inability to Achieve Different Temp. Between the Two Drawers of BR-2 8-26
HH. Product Temp. 10° or More Colder than Displayed Temp. 8-26
II. 1. "Extremely" Cold Temp. Displayed - (1° to 7° in BR-2 or -21° to -15° in BF/I-2) 8-26
2. If outside U.S. - "Extremely" Warm Temp. Displayed - (34° to 45° in BR-2 or -5° to 5° in BF/I-2) 8-26
JJ. No Ice in BFI-2, "ICE" not Displayed on LCD 8-26
KK. No Ice in BFI-2, "ICE" is Displayed on LCD 8-27
LL. Too Much Ice in BFI-2 8-28
MM. Icemaker in BFI-2 Produces Hollow Cubes 8-28
NN. Icemaker in BFI-2 Produces Small Cubes 8-28
OO. Water in Ice Bucket / Clump of Ice in Ice Bucket of BFI-2 8-28
PP. Membrane Switch on Control Board Malfunctioning 8-29
QQ. No Lighting 8-29
RR. Lights Stay on When Drawers Are Closed (May be Accompanied by Drawer Ajar Alarm Bell) 8-29
SS. Drawer Not Able to Close Completely 8-29
TT. Door or Drawers Uneven 8-30

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
A.) Warm Freezer Temperature with "SERVICE" Flashing *Pointers:* *Verify freezer comp is running & unit is not in defrost, then initiate Diagnostic Mode and observe freezer evaporator temperature.* *1. Evaporator temp -20°F or lower, see:* • *Door ajar* • *Lights ON w/door closed* • *Evaporator fan fault* • *Compartment thermistor misread* • *Evaporator heavily frosted* • *Sealed system fault - leak or partial restriction* *2. Evaporator. Temp. between -19°F & 10°F, see:* • *Condenser Air Flow* • *Compartment thermistor misread* • *Sealed system fault, leak* *3. Evaporator. Temp. 20°F or higher, see:* • *Power to compressor fault,* • *Sealed system fault, leak, restriction or inefficient compressor* *(**NOTE:** "Pointers" do not apply to cabinet initial pulldown from ambient temperatures.)* *(**NOTE:** To clear SERVICE annunciator after repairs, power OFF, then back ON.)* *(Continued)*	**Door or Drawer Ajar** a. Food product obstruction b. Door/cabinet hinge problem c. Drawer closer tripped backwards	 a. Move obstruction. b. See Door Hinge Operation Test Procedures later in this section. Replace hinge if defective. c. Trip drawer closer forward
	Condenser Air Flow a. Dirty condenser b. Condenser fan blade obstructed or loose c. Condenser fan motor disconnected d. Condenser fan motor defective e. Power from control board fault (700TC/I-2 & 700TR-2 only) f. Power from compressor controller fault (700TF/I-2V only)	 a. Clean condenser. b. Remove obstruction or tighten nut on motor shaft. c. Check continuity from motor to control board (J7-1) on 700TC/I-2 & 700TR-2, from motor to compressor on 700TF/I-2, or from motor to compressor controller on 700TF/I-2V . Reconnect / repair wiring or connections. d. Check for 115V AC to motor, replace motor if defective. e. With compressor running, check for 115V AC at control board (J7-1 on 700TC/I-2 & 700TR-2). Replace board if defective. f. With compressor running, check for 115V AC from controller (700TF/I-2V only). Replace compressor controller if defective.
	Light ON with Door/ Drawers Closed a. Top hinge cover missing, not depressing light switch b. Faulty light switch	 a. Replace hinge cover. b. Check operation of light switches, lights off when switch is depressed. Replace switch if defective. *(**NOTE:** there are two light switches in the drawer area)*
	Evaporator Fan Fault a. Top hinge cover missing, not depressing fan switch b. Fan blade obstructed or out of position c. Faulty fan switch *(**NOTE:** A compressor must be running)* d. Evaporator. fan motor disconnected e. Evaporator fan motor defective *(**NOTE:** Compressor must be running)*	 a. Install hinge cover. b. Move obstruction or reposition blade. c. Check for 115V AC to fan switch, depress fan switch and check for 115V AC from fan switch. Replace switch if defective. *(**NOTE:** there are two fan switches in the drawer area)* d. Check electrical connections of motor. Reconnect / repair bad connections. e. Check for 115V AC at fan motor with fan switch depressed. Replace motor if defective.
	Compartment Thermistor Misread	Check resistance of freezer compartment thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
(Continued) **A.) Warm Freezer Temperature with "SERVICE" Flashing** *(See Pointers on previous page)*	**Evaporator Heavily Frosted**	
	a. Door or drawer ajar	a. See Door or Drawer Ajar on previous page.
	b. Evaporator fan fault	b. See Evaporator Fan Fault on previous page.
	c. Compartment thermistor misread	c. See Compartment Thermistor Misread on previous page.
	d. Defrost heater disconnected or faulty	d. Check electrical connections. Reconnect / repair bad connections. Check resistance of heater, 30-38 Ohms, replace if defective.
	e. Defrost terminator disconnected or faulty.	e. Check electrical connections, Reconnect / repair bad connections or replace terminator if defective.
	f. Defrost sense line disconnected.	f. Manually initiate defrost by pressing ICE key for 10 seconds. If defrost lasts exactly 5 minutes, check all connections of gray/white wire from terminator to J4-4 on control board. Reconnect / repair bad connections.
	g. No power from control board to defrost circuit	g. Manually initiate defrost by pressing ICE key for 10 seconds. Check for 115V AC at E2 on control board. Replace control board if defective.
	Power to Compressor Fault ***NOTE:*** *For 700TF/I-2V, see Error Code Troubleshooting Guide*	Check for 115V AC at E7 on control board. Replace control board if defective.
	Sealed System Fault • Sealed System Leak • Sealed System Restriction • Inefficient Compressor	See Sealed System Troubleshooting Guide

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
B.) Warm Freezer Temperatures <u>without</u> "SERVICE" Flashing *Pointers:* *Verify freezer comp is running & unit is not in defrost, then initiate Diagnostic Mode and observe freezer evaporator temperature.* *1. "Sr" appears during Diagnostic Mode, see:* • *Unit in Showroom Mode* *2 Evaporator temp -20°F or lower , see:* • *Door ajar* • *Lights ON w/door closed* • *Evaporator fan fault* • *Compartment thermistor mis-read* • *Evaporator heavily frosted* • *Sealed system fault - leak or partial restriction* *3. Evaporator. Temp. between -19°F & 10°F, see:* • *Warm food load* • *High room ambient* • *Door or drawer ajar* • *Condenser air flow* • *Sealed system fault, leak* *4. Evaporator. Temp. 20°F or higher, see:* • *Power To Compressor fault* • *Sealed system fault, leak restriction or inefficient compressor* *(**NOTE:** "Pointers" do not apply to cabinet initial pulldown from ambient temperatures.)* *(Continued)*	**No Power to Unit**	Check power to unit, plug unit in or switch supply circuit breaker ON.
	Unit Switched OFF	Check for "OFF" displayed at LCD. If off, press UNIT ON/OFF key.
	Unit in Show Room Mode	Press UNIT ON/OFF key to OFF, then press and hold WARMER& COLDER keys, and press UNIT ON/OFF key.
	Control Set Too High	Check set-point. If high, adjust.
	Warm Food Load	Check contents of freezer for warm food load. Instruct customer.
	High Room Ambient	Instruct customer unit performs best between 60°F(16°C) and 90°F(32°C).
	Door or Drawer Ajar a. Food product obstruction b. Door/cabinet hinge problem c. Drawer closer tripped backwards	 a. Move obstruction. b. See Door Hinge Operation Test Procedures later in this section. Replace hinge if defective. c. Trip drawer closer forward
	Condenser Air Flow a. Dirty condenser b. Condenser fan blade obstructed or loose c. Condenser fan motor disconnected d. Condenser fan motor defective e. Power from control board fault (700TC/I-2 & 700TR-2 only) f. Power from compressor controller fault (700TF/I-2V only)	 a. Clean condenser. b. Remove obstruction or tighten nut on motor shaft. c. Check continuity from motor to control board (J7-1) on 700TC/I-2 & 700TR-2, from motor to compressor on 700TF/I-2, or from motor to compressor controller on 700TF/I-2V . Reconnect / repair wiring or connections. d. Check for 115V AC to motor, replace motor if defective. e. With compressor running, check for 115V AC at control board (J7-1 on 700TC/I-2 & 700TR-2). Replace board if defective. f. With compressor running, check for 115V AC from controller (700TF/I-2V only). Replace compressor controller if defective.
	Lights ON with Door/ Drawers Closed a. Top hinge cover missing, not depressing light switch b. Faulty light switch	 a. Replace hinge cover. b. Check operation of light switches, lights off when switch is depressed. Replace switch if defective. *(**NOTE:** there are two light switches in the drawer area)*

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
(Continued) **B.) Warm Freezer Temperatures <u>without</u> "SERVICE" Flashing** *(See Pointers on previous page)*	**Evaporator Fan Fault** a. Top hinge cover missing, not depressing fan switch b. Fan blade obstructed or out of position c. Faulty fan switch *(**NOTE:** A compressor must be running)* d. Evaporator. fan motor disconnected e. Evaporator fan motor defective *(**NOTE:** Compressor must be running)*	 a. Replace hinge cover. b. Move obstruction or reposition blade. c. Check for 115V AC to fan switch, depress fan switch and check for 115V AC from fan switch. Replace switch if defective. *(**NOTE:** there are two fan switches in the drawer area)* d. Check electrical connections of motor. Reconnect / repair bad connections. e. Check for 115V AC at fan motor with fan switch depressed. Replace motor if defective.
	Compartment Thermistor Misread	Check resistance of freezer compartment thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.
	Evaporator Heavily Frosted a. Door or drawer ajar b. Evaporator fan fault c. Compartment thermistor misread d. Defrost heater disconnected or faulty e. Defrost terminator disconnected or faulty. f. Defrost sense line disconnected. g. No power from control board to defrost circuit	 a. See Door or Drawer Ajar on previous page. b. See Evaporator Fan Fault above. c. See Compartment Thermistor Misread above. d. Check electrical connections. Reconnect / repair bad connections. Check resistance of heater, 30-38 Ohms, replace if defective. e. Check electrical connections, Reconnect / repair bad connections or replace terminator if defective. f. Manually initiate defrost by pressing ICE key for 10 seconds. If defrost lasts exactly 5 minutes, check all connections of gray/white wire from terminator to J4-4 on control board. Reconnect / repair bad connections. g. Manually initiate defrost by pressing ICE key for 10 seconds. Check for 115V AC at E2 on control board. Replace control board if defective.
	Power to Compressor Fault ***NOTE:** For 700TF/I-2V, see Error Code Troubleshooting Guide*	Check for 115V AC at E7 on control board. Replace control board if defective.
	Sealed System Fault • Sealed System Leak • Sealed System Restriction • Inefficient Compressor	See Sealed System Troubleshooting Guide

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
C. Warm Refrigerator Temperatures with "SERVICE" Flashing *Pointers:* *With refrigerator door or drawers open and compressor running for <u>five minutes</u>, initiate Diagnostic Mode and observe refrigerator evaporator temperature.* *1. "EE" appears in place of refrigerator evap. temperature, see:* • *Evaporator thermistor disconnected or shorted* *2. Evaporator temp 5°F or lower within 5 minutes w/ door open, see:* • *Door ajar* • *Lights stay ON* • *Evaporator fan fault* • *Compartment or evaporator thermistor misread* • *Evaporator heavily frosted* • *Sealed system fault - leak or partial restriction* *3. Evaporator. Temp. cannot pull below 25°F within 5 minutes w/ door open, see:* • *Condenser Air Flow* • *Compartment or evaporator thermistor misread* • *Sealed system fault, leak or inefficient compressor* *4.* Evaporator. Temp. 30°F or higher after 5 minutes w/door open, see: • *Condenser Air Flow* • *Power to compressor fault* • *Sealed system fault, leak, restriction or inefficient compressor* *(**NOTE:** "Pointers" do not apply to cabinet initial pulldown from ambient temperatures.)* *(**NOTE:** To clear SERVICE annunciator after repairs, power OFF, then back ON.)* *(Continued)*	**Door or Drawer Ajar** a. Food product obstruction b. Door/cabinet hinge problem c. Drawer closer tripped backwards	 a. Move obstruction. b. See Door Hinge Operation Test Procedures later in this section. Replace hinge if defective. c. Trip drawer closer forward
	Condenser Air Flow a. Dirty condenser b. Condenser fan blade obstructed or loose c. Condenser fan motor disconnected d. Condenser fan motor defective e. Power from control board fault (700TC/I-2 & 700TR-2 only) f. Power from compressor controller fault (700TF/I-2V only)	 a. Clean condenser. b. Remove obstruction or tighten nut on motor shaft. c. Check continuity from motor to control board (J7-1) on 700TC/I-2 & 700TR-2, from motor to compressor on 700TF/I-2, or from motor to compressor controller on 700TF/I-2V . Reconnect / repair wiring or connections. d. Check for 115V AC to motor, replace motor if defective. e. With compressor running, check for 115V AC at control board (J7-1 on 700TC/I-2 & 700TR-2). Replace board if defective. f. With compressor running, check for 115V AC from controller (700TF/I-2V only). Replace compressor controller if defective.
	Light ON with Door/ Drawers Closed a. Top hinge cover missing light switch b. Faulty light switch	 a. Replace hinge cover. b. Check operation of light switches, lights off when switch is depressed. Replace switch if defective. *(**NOTE:** there are two light switches in the drawer area)*
	Evaporator Fan Fault a. Top hinge cover missing fan switch b. Fan blade obstructed or out of position c. Faulty fan switch *(**NOTE:** A compressor must be running)* d. Evaporator. fan motor disconnected e. Evaporator fan motor defective *(**NOTE:** A compressor must be running)*	 a. Replace hinge cover. b. Move obstruction or reposition blade. c. Check for 115V AC to fan switch, depress fan switch and check for 115V AC from fan switch. Replace switch if defective. *(**NOTE:** there are two fan switches in the drawer area)* d. Check electrical connections of motor. Reconnect / repair bad connections. e. Check for 115V AC at fan motor. Replace motor if defective.
	Evaporator Thermistor Disconnected or Shorted	Check refrigerator evaporator thermistor electrical connections from thermistor to J1 on control board. Reconnect / repair connections. Check resistance of refrigerator evaporator thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.
	Compartment or Evaporator Thermistor Misread	Check resistance of refrigerator compartment and evaporator thermistors for 30,000 to 33,000 ohms at 32°F. Replace if defective.

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
(Continued) **C. Warm Refrigerator Temperatures with "SERVICE" Flashing** *(See Pointers on previous page)*	**Evaporator Heavily Frosted** a. Door or drawer ajar b. Evaporator fan fault c. Thermistor misread	 a. See Door or Drawer Ajar above. b. See Evaporator Fan Fault above. c. See Thermistor Misread above.
	Power to Compressor Fault ***NOTE:*** *For 700TF/I-2V, see Error Code Troubleshooting Guide*	Check for 115V AC at E7 and/or E6 on control board. Replace control board if defective.
	Sealed System Fault • Sealed System Leak • Sealed System Restriction • Inefficient Compressor	See Sealed System Troubleshooting Guide
D. Warm Refrigerator Temperatures <u>without</u> "SERVICE" Flashing *Pointers:* *With refrigerator door / drawers open & compressor running for <u>5 minute</u>, initiate Diagnostic Mode and observe evaporator temp.* *1. "Sr" appears during Diagnostic Mode, see:* • *Unit in Showroom Mode* *2 Evaporator temp 5°F or lower within 5 minutes, see:* • *Door ajar* • *Lights stay ON* • *Evaporator fan fault* • *Compartment or evaporator thermistor misread* • *Evaporator heavily frosted* • *Sealed system fault - leak or partial restriction* *3. Evap. Temp. cannot pull below 25°F within 5 minutes, see:* • *Warm food load* • *High room ambient* • *Door or drawer ajar* • *Condenser air flow* • *Sealed system fault, leak* *4.* Evaporator. Temp. 30°F or higher after 5 minutes, see: • *Condenser Air Flow* • *Power to compressor fault* • *Sealed system, leak, restriction or inefficient compressor* (***NOTE:*** *"Pointers" do not apply to initial pulldown from ambient.)* *(Continued)*	**No Power to Unit**	Check power to unit, plug unit in or switch supply circuit breaker ON.
	Unit Switched OFF	Check for "OFF" displayed at LCD. If off, press UNIT ON/OFF key.
	Unit in Show Room Mode	Press UNIT ON/OFF key to OFF, then press and hold WARMER& COLDER keys, and press UNIT ON/OFF key.
	Control Set Too High	Check set-point. If high, adjust.
	Warm Food Load	Check contents of freezer for warm food load. Instruct customer.
	High Room Ambient	Instruct customer unit performs best between 60°F(16°C) and 90°F(32°C).
	Door or Drawer Ajar a. Food product obstruction b. Door/cabinet hinge problem c. Drawer closer tripped backwards	 a. Move obstruction. b. See Door Hinge Operation Test Procedures later in this section. Replace hinge if defective. c. Trip drawer closer forward
	Condenser Air Flow a. Dirty condenser b. Condenser fan blade obstructed or loose c. Condenser fan motor disconnected d. Condenser fan motor defective e. Power from control board fault (700TC/I-2 & 700TR-2 only) f. Power from compressor controller fault (700TF/I-2V only)	 a. Clean condenser. b. Remove obstruction or tighten nut on motor shaft. c. Check continuity from motor to control board (J7-1) on 700TC/I-2 & 700TR-2, from motor to compressor on 700TF/I-2, or from motor to compressor controller on 700TF/I-2V . Reconnect / repair wiring or connections. d. Check for 115V AC to motor, replace motor if defective. e. With compressor running, check for 115V AC at control board (J7-1 on 700TC/I-2 & 700TR-2). Replace board if defective. f. With compressor running, check for 115V AC from controller (700TF/I-2V only). Replace compressor controller if defective.

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
(Continued) **D. Warm Refrigerator Temperatures <u>without</u> "SERVICE" Flashing** *(See Pointers on previous page)*	**Lights ON with Door/ Drawers Closed** a. Top hinge cover missing, not depressing light switch b. Faulty light switch	 a. Replace hinge cover. b. Check operation of light switches, lights off when switch is depressed. Replace switch if defective. *(**NOTE:** there are two light switches in the drawer area)*
	Evaporator Fan fault a. Top hinge cover missing fan switch b. Fan blade obstructed or out of position c. Faulty fan switch *(**NOTE:** A compressor must be running)* d. Evaporator. fan motor disconnected e. Evaporator fan motor defective *(**NOTE:** Compressor must be running)*	 a. Replace hinge cover. b. Move obstruction or reposition blade. c. Check for 115V AC to fan switch, depress fan switch and check for 115V AC from fan switch. Replace switch if defective. *(**NOTE:** there are two fan switches in the drawer area)* d. Check electrical connections of motor. Reconnect / repair bad connections. e. Check for 115V AC at fan motor with fan switch depressed. Replace motor if defective.
	Compartment or Evaporator Thermistor Misread	Check resistance of refrigerator compartment and evaporator thermistors for 30,000 to 33,000 ohms at 32°F. Replace thermistor if defective.
	Evaporator Heavily Frosted a. Door or drawer ajar b. Evaporator fan fault c. Thermistor misread	 a. See Door or Drawer Ajar on previous page. b. See Evaporator Fan Fault above. c. See Compartment & Evaporator Thermistor Misread above.
	Power to Compressor Fault ***NOTE:*** *For 700TF/I-2V, see Error Code Troubleshooting Guide*	Check for 115V AC at E7 and/or E6 on control board. Replace control board if defective.
	Sealed System Fault • Sealed System Leak • Sealed System Restriction • Inefficient Compressor	See Sealed System Troubleshooting Guide

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
E. Warm or Normal Temperatures in Both Compartments with "SERVICE" Flashing	**High Room Ambient**	Instruct customer unit performs best between 60°F(16°C) and 90°F(32°C).
	Condenser Air Flow a. Dirty condenser b. Condenser fan blade obstructed or loose c. Condenser fan motor disconnected d. Condenser fan motor defective e. Power from control board fault (700TC/I-2 & 700TR-2 only) f. Power from compressor controller fault (700TF/I-2V only)	 a. Clean condenser. b. Remove obstruction or tighten nut on motor shaft. c. Check continuity from motor to control board (J7-1) on 700TC/I-2 & 700TR-2, from motor to compressor on 700TF/I-2, or from motor to compressor controller on 700TF/I-2V . Reconnect / repair wiring or connections. d. Check for 115V AC to motor, replace motor if defective. e. With compressor running, check for 115V AC at control board (J7-1 on 700TC/I-2 & 700TR-2). Replace board if defective. f. With compressor running, check for 115V AC from controller (700TF/I-2V only). Replace compressor controller if defective.
	Refrigerator Evaporator Thermistor Disconnected or Shorted	Initiate Diagnostic Mode. If "EE" appears in place of refrigerator evap temp, check refrigerator evaporator thermistor electrical connections from thermistor to J1 on control board. Reconnect / repair connections. Check resistance of refrigerator evaporator thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.
F. Warm or Normal Temp. in One or Both Compartment with "SERVICE" Flashing and "EC" on the LCD	**Excessive Compressor Run with Error Codes Logged**	See Error Code Table and Error Code Troubleshooting Guide. Also see "A", "C" and "E" in General Troubleshooting Guide.
G. Warm or Normal Temp. in One or Both Compartment with "SERVICE" Steady, but not Flashing on the LCD	**Error Codes were Logged, were Observed, but were not Cleared**	See Error Code Table and Error Code Troubleshooting Guide. If problem was corrected and Error Codes were simply not cleared, press Bell ON/OFF key for 15 seconds.

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
H. Warm Temperatures in Both Compartments <u>without</u> "SERVICE" Flashing	**No Power to Unit**	Check power to unit, plug unit in or switch supply circuit breaker ON.
	Unit Switched OFF	Check for "OFF" displayed at LCD. If off, press UNIT ON/OFF key.
	Unit in Show Room Mode	Press UNIT ON/OFF key to OFF, then press and hold WARMER& COLDER keys, and press UNIT ON/OFF key.
	Control Set Too High	Check set-point. If high, adjust.
	Warm Food Load	Check contents of freezer for warm food load. Instruct customer.
	High Room Ambient	Instruct customer unit performs best between 60°F(16°C) and 90°F(32°C).
	Door or Drawer Ajar a. Food product obstruction b. Door/cabinet hinge problem c. Drawer closer tripped backwards	 a. Move obstruction. b. See Door Hinge Operation Test Procedures later in this section. Replace hinge if defective. c. Trip drawer closer forward
	Condenser Air Flow a. Dirty condenser b. Condenser fan blade obstructed or loose c. Condenser fan motor disconnected d. Condenser fan motor defective e. Power from control board fault (700TC/I-2 & 700TR-2 only) f. Power from compressor controller fault (700TF/I-2V only)	 a. Clean condenser. b. Remove obstruction or tighten nut on motor shaft. c. Check continuity from motor to control board (J7-1) on 700TC/I-2 & 700TR-2, from motor to compressor on 700TF/I-2, or from motor to compressor controller on 700TF/I-2V . Reconnect / repair wiring or connections. d. Check for 115V AC to motor, replace motor if defective. e. With compressor running, check for 115V AC at control board (J7-1 on 700TC/I-2 & 700TR-2). Replace board if defective. f. With compressor running, check for 115V AC from controller (700TF/I-2V only). Replace compressor controller if defective.
I. Warm or Normal Freezer Temperatures with "EE" Displayed for Freezer Temp and "SERVICE" Flashing	**Freezer Compartment Thermistor Disconnected or Shorted**	Check freezer compartment thermistor electrical connections from thermistor to J1 on control board. Reconnect / repair connections. Check resistance of freezer compartment thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.
J. Warm or Normal Refrigerator Temperatures with "EE" Displayed for Refrigerator Temp and "SERVICE" Flashing	**Refrigerator Compartment Thermistor Disconnected or Shorted**	Check refrigerator compartment thermistor electrical connections from thermistor to J1 on control board. Reconnect / repair connections. Check resistance of refrigerator compartment thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
K. Product Temperature 10° or More Colder than Displayed Temperature	**Compartment Thermistor Misread**	Check resistance of compartment thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.
L. 1. "Extremely" Cold Temperatures Displayed ***(1° to 7° in Refrigerator and -21° to -15° in Freezer)*** **2. If outside US - "Extremely" Warm Temperatures Displayed** ***(34° to 45° in Refrigerator and -5° to 5° in Freezer)***	**1. Control Set to Display Celsius but Customer Thought it Was Fahrenheit** **2. If Outside US - Control Set to Display Fahrenheit but Customer Thought it Was Celsius**	1. Control set to display Celsius but customer thought it was Fahrenheit. Switch unit OFF, then ON, then press & hold Bell key and UNIT ON/OFF key for 10 seconds. 2. If Outside US - Control set to display Fahrenheit but customer thought it was Celsius. Switch unit OFF, then ON, then press & hold Bell key and UNIT ON/OFF key for 10 seconds.
M. "ICE" and "SERVICE" Flashing on LCD	**Water Valve Energized Longer then Fifteen Seconds**	Check icemaker area for jammed ice cube, clear jam if present. Check levelness of icemaker; level if needed. Check position of fill cup. Reposition if in ice path. Check water supply pressure; must be constant 20-100 PSI. If not, instruct customer. Check water valve operation, opens when 115V AC is applied, closes completely when 115V AC is removed. Water valve Ohms = 160. Replace if defective. ***NOTE:*** *Unit must be switched OFF, then ON to clear flashing ICE & SERVICE.*
N. No Ice, "ICE" Displayed on LCD, but not Flashing **(NOTE:** *The Icemaker system is disabled for 45 minutes after each harvest.)*	**Unit Has Not Run Long Enough**	Freezer must be 17°F for icemaker to operate, approximately 24 hours after unit installation. Instruct customer.
	Warm Freezer Temperatures *(**NOTE**: Freezer must be 17°F or colder for icemaker to function)*	See PROBLEM A, B, E, F & G earlier in Troubleshooting Guide.
	Shut-off Arm Stuck in Up/Off Position	Check shut-off arm, if stuck in up/off position, correct problem.
	Disconnected or Defective Water Valve	Check electrical connections and water connections at water valve, Reconnect / repair connections. Check resistance of water valve, 160 ohms. Replace if defective.
	Frozen Fill Tube a. Water Supply Problem b. Disconnected or defective fill tube heater c. No power from control board to fill tube heater	 a. Check water supply pressure; must be constant 20-100 PSI. If not, instruct customer. b. Check electrical connections at fill tube heater. Reconnect / repair connections. Check resistance of fill tube heater, 2300 - 2900 Ohms. Replace if defective. c. Check for 115V AC at J7-3 on control board. Replace board if defective.

(Continued)

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
(Continued) **N. No Ice, "ICE" Displayed on LCD, but not Flashing** **(NOTE:** *The Icemaker system is disabled for 45 minutes after each harvest.)*	**Icemaker System Fault**	Pressing ICE key to OFF, then to ON to bypass 45 minute dwell. Then, depress icemaker switch & manually start icemaker with jumper between ports “T” & “H”. Watch cycle of icemaker and see #1, #2 & #3 below. 1. If icemaker motor starts and finishes cycle:
	a. Disconnected or damaged electrical connections at icemaker or water valve.	a. Check for 115V at valve during fill mode. If no 115V, inspect connections at icemaker and valve. Repair or replace connection.
	b. Defective icemaker	b. Check for 115V from icemaker during fill mode. If no power, replace icemaker.
		2. If icemaker motor starts but does not finish cycle:
	c. Defective icemaker	c. Replace icemaker.
		3. If icemaker motor does NOT start:
	d. Disconnected or damaged electrical connections at icemaker	d. Check for 115V to icemaker. If no power, repair electrical connection.
	e. Icemaker switch disconnected or faulty	e. Check power to/from icemaker switch. Repair connection, replace defective switch.
	f. Electrical connection at control board or control board defect	f. Check for 115V at control board (J7-5). If no power, replace control board. If power, repair connection.
O. No Ice and "ICE" <u>Not</u> Displayed on LCD	**Icemaker System Not Energized**	Press ICE key. “ ICE” should appear on LCD.
P. Icemaker produces Too much ice	**Ice Level Arm/Linkage Bent or Broken**	Inspect ice level arm, shut-off arm and linkage. Replace defective parts.
	Icemaker Faulty	With the ice level arm in the UP/OFF position, Pressing ICE key to OFF, then to ON to bypass 45 minute dwell. Then, depress icemaker switch & manually start icemaker with jumper between ports “T” & “H”. If icemaker motor starts with arm in the UP/OFF position, replace icemaker.
Q. Icemaker Produces Hollow Cubes	**Freezer Too Cold, Cycles Icemaker Too Soon**	See PROBLEM “I” earlier in Troubleshooting Guide.
	Not Enough Thermal-Mastic on Icemaker Thermostat	Inspect icemaker thermostat, apply more Thermal-Mastic to thermostat.
	Icemaker Defective	Replace Icemaker
R. Icemaker Produces Small cubes	**Water Supply Problem**	Check water supply pressure; must be constant 20-100 PSI. If not, instruct customer.
	Icemaker Not Level	Check level of icemaker, adjust if needed
	Low Fill Adjustment on Icemaker	Check for 100-110 cc. fill (3.5-3.75 oz.). If low, increase fill by turning adjusting screw counterclockwise.

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
S. Water in Ice Bucket / Clump of Ice in Ice Bucket	**Icemaker Not Level**	Check level of icemaker, level if needed
	High Fill Adjustment on Icemaker	Check for 100-110 cc. fill (3.5-3.75 oz.). Turn adjusting screw clockwise to decrease.
	Water Valve Energized Too Long	Check for jammed cube, clear jam. Check level of icemaker, level if needed. Check position of fill cup. Reposition if in ice path. Check water supply pressure for constant 20-100 PSI. If not, instruct customer. Check water valve operation, opens when 115V AC applied, closes completely when 115V AC removed. valve solenoid ohms = 160. Replace if defective.
	Intermittent Warm Freezer Temperatures	See PROBLEMs A, B, E, F & G earlier in Troubleshooting Guide.
T. Membrane Switch on Control Board Malfunctioning	**Control Panel Ribbon Cable Disconnected or Connected Incorrectly**	Check control panel ribbon cable. All Pins on board should be in ribbon cable terminal housing. See Membrane Switch/Ribbon Cable Test Procedures for terminal housing Pin 1 identification.
	Control Panel Assembly Defective (OR) No Signal Read at Control Board	See Membrane Switch/Ribbon Cable Test Procedures. If membrane switch fails any test, replace entire control panel assembly. If switch passes all tests, replace control board.
U. No Lights	**No power to unit**	Check power to unit, plug unit in or switch supply circuit breaker ON.
	Unit switched OFF	Check for “OFF” displayed at LCD. If off, press UNIT ON/OFF key.
	Unit in Sabbath Mode	Press UNIT ON/OFF key to OFF.
	Defective or loose light bulb(s)	Install a known good light bulb.
	Light Terminator Interrupt / Door Ajar	Check for proper door closing. If door is open too long, lighting system is interrupted by terminator. If door is obstructed, move obstruction. If door does not close properly, see Door Hinge Operation Test Procedures later in this section. Replace hinge if defective.
	Light Switch Disconnected or Defective	Check wire connections at light switch. Reconnect/repair. Check for 115V AC to and from light switch. Replace switch if defective.
	Lighting System Wiring Disconnected or Defective	Check continuity from light sockets to control board (J7-4). Reconnect/repair or replace defective components.
	No Power From Control Board (***NOTE:*** *See Unit in Sabbath Mode above.)*	Check for 115V AC at J7-4 on control board. Replace board if defective. (***NOTE:*** *See Unit in Sabbath Mode above.)*

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
V. Lights Stay ON when Door &/or Drawers are Closed - (May be Accompanied by Door/Drawer Ajar Alarm Bell)	**Door or Drawer Ajar** a. Food product obstruction b. Door/cabinet hinge problem c. Drawer closer tripped backwards	 a. Move obstruction. b. See hinge adjustment procedures at end of troubleshooting guides. Replace hinge if defective. c. Trip drawer closer forward
	Top Hinge Cover Missing	Install hinge cover
	Light Switch Defective	Check for 115V AC to and from light switch. Replace switch if defective.
	Wiring to Light Switch and Fan Switch Crossed	Check operation of light switch and fan switch, lights OFF when light switch depressed, fan ON when fan switch depressed. If crossed, reconnect wiring correctly.
W. Door or Drawers Not Able to Close Completely	**Food Product Obstruction**	Move obstruction.
	Door/Cabinet Hinge Problem	See Door Hinge Operation Test Procedures later in this section. Replace hinge if defective.
	Drawer Closer Tripped Backwards	Trip drawer closer forward
X. Door or Drawers Uneven	**Improper Door or Drawer Panel Installation**	The doors and drawers are non-adjustable. Instead, the door and/or drawer panels must be adjusted if there is an alignment problem. Refer to the Installation Manual and/or installation video for panel installation and adjustment.
	Unit Not Level	Check levelness of unit. If un-level, turn front leveling legs counterclockwise to raise front or clockwise to lower it. Rear levelers are adjusted from front of base by turning adjusting screw clockwise to raise rear or counterclockwise to lower it. Refer to the Installation Manual and/or installation video for complete installation and leveling instructions.

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
AA. Warm Freezer Temp. in BF/I-2 <u>without</u> "SERVICE" Flashing *Pointers:* *Verify freezer comp is running & unit is not in defrost, then initiate Diagnostic Mode and observe freezer evaporator temperature.* *1. Evaporator temp -20°F or lower , see:* • *Drawer ajar* • *Lights ON w/door closed* • *Evaporator fan fault* • *Compartment thermistor mis-read* • *Evaporator heavily frosted* • *Sealed system fault - leak or partial restriction* *2. Evaporator. Temp. between -19°F & 10°F, see:* • *Warm food load* • *High room ambient* • *Drawer ajar* • *Condenser air flow* • *Sealed system fault, leak* *3. Evaporator. Temp. 20°F or higher, see:* • *Unit in Showroom Mode* • *Power To Compressor fault* • *Sealed system fault, leak restriction or inefficient compressor* *(**NOTE:** "Pointers" do not apply to cabinet initial pulldown from ambient temperatures.)* *(Continued)*	**No Power to Unit**	Check power to unit, plug unit in or switch supply circuit breaker ON.
	Unit Switched OFF	Check for "OFF" displayed at LCD. If off, press UNIT ON/OFF key.
	Unit in Show Room Mode	Press UNIT ON/OFF key to OFF, then press and hold WARMER& COLDER keys, and press UNIT ON/OFF key.
	Control Set Too High	Check set-point. If high, adjust.
	Warm Food Load	Check contents of freezer for warm food load. Instruct customer.
	High Room Ambient	Instruct customer unit performs best between 60°F(16°C) and 90°F(32°C).
	Drawer Ajar a. Food product obstruction c. Drawer closer tripped backwards	 a. Move obstruction. c. Trip drawer closer forward
	Condenser Air Flow a. Dirty condenser b. Condenser fan blade obstructed or loose c. Condenser fan motor disconnected d. Condenser fan motor defective *(**NOTE:** Compressor must be running)*	 a. Clean condenser. b. Remove obstruction or tighten nut on motor shaft. c. Check continuity from motor to compressor. Reconnect / repair wire or connections. d. Check for 115V AC to motor, replace motor if defective.
	Light ON with Drawers Closed b. Faulty Reed Switch	 Check for 24 V AC to Reed Switch, depress switch and check for 24 V AC from Reed Switch. Replace Reed Switch if defective. *(**NOTE:** there are two Reed Switches)* **⚠ CAUTION** **Low Voltage Circuit. Do NOT apply 115V AC.**

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
(Continued) **AA. Warm Freezer Temp. in BF/I-2 <u>without</u> "SERVICE" Flashing** *(See Pointers on previous page)*	**Evaporator Fan Fault**	
	a. Fan blade obstructed or out of position	a. Move obstruction or reposition blade.
	b. Evaporator fan assembly out of position	b. Make sure evaporator fan assembly is in grooves of fan shroud and there is no play from front to back. Reposition if out of position.
	c. Evaporator. fan motor disconnected	c. Check electrical connections from motor to P9 on control board. Reconnect / repair bad connections.
	d. Evaporator fan motor defective *(**NOTE:** Compressor must be running) (**NOTE 2:** After a defrost, the evaporator fan will not run if evaporator is below 35°F)*	d. Check for 115V AC at fan motor with Reed Switch depressed. Replace motor if defective.
	e. Faulty Reed Switch *(**NOTE** Compressor must be running.)*	e. Check for 24V AC from P2 on control board to Reed Switch, depress switch and check for 24V AC from Reed Switch. Replace Reed Switch if defective. *(**NOTE:** there are two Reed Switches)* **⚠ CAUTION** **Low Voltage Circuit. Do NOT apply 115V AC.**
	Compartment Thermistor Misread	Check resistance of freezer compartment thermistor in Reed Switch for 30,000 to 33,000 ohms at 32°F. Replace Reed Switch if defective.
	Evaporator Heavily Frosted	
	a. Drawer ajar	a. See Drawer Ajar on previous page.
	b. Evaporator fan fault	b. See Evaporator Fan Fault above.
	c. Compartment thermistor misread	c. See Thermistor Misread above.
	d. Defrost heater disconnected or faulty	d. Check heater electrical connections. Reconnect / repair bad connections. Check resistance of heater, 25-29 Ohms, replace if defective.
	e. Defrost terminator disconnected or faulty.	e. Check terminator electrical connections, Reconnect / repair bad connections or replace terminator if defective.
	f. Drain tube heater disconnected or defective	f. Check drain heater electrical connections. Reconnect / repair bad connections. Check resistance of drain heater, 1700-2100 Ohms, replace if defective.
	g. No power from control board to defrost circuit	g. Manually initiate defrost by pressing ICE key for 10 seconds. Check for 115V AC at P8 on control board. Replace control board if defective.
	Power to Compressor Fault	Check for 115V AC at P14 on control board. Replace control board if defective.
	Sealed System Fault • Sealed System Leak • Sealed System Restriction • Inefficient Compressor	See Sealed System Troubleshooting Guide

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
BB. Warm Refrigerator Temp. in Both Drawers of BR-2 <u>without</u> "SERVICE" Flashing *Pointers:* *With refrigerator drawers open and compressor running for <u>five minute</u>, initiate Diagnostic Mode and observe refrigerator evaporator temperature.* *1. "EE" appears in place of refrigerator evap. temperature, see:* • *Evaporator thermistor disconnected or shorted* *2. Evaporator temp 5°F or lower within 5 minutes w/ door open, see:* • *Door ajar* • *Lights stay ON* • *Evaporator fan fault* • *Compartment or evaporator thermistor misread* • *Evaporator heavily frosted* • *Sealed system fault - leak or partial restriction* *3. Evaporator. Temp. cannot pull below 25°F within 5 minutes w/ door open, see:* • *Condenser Air Flow* • *Compartment or evaporator thermistor misread* • *Sealed system fault, leak or inefficient compressor* 4. Evaporator. Temp. 30°F or higher after 5 minutes w/door open, see: • *Condenser Air Flow* • *Power to compressor fault* • *Sealed system fault, leak, restriction or inefficient compressor* *(**NOTE:** "Pointers" do not apply to cabinet initial pulldown from ambient temperatures.)* *(Continued)*	**No Power to Unit**	Check power to unit, plug unit in or switch supply circuit breaker ON.
	Unit Switched OFF	Check for "OFF" displayed at LCD. If off, press UNIT ON/OFF key.
	Unit in Show Room Mode	Press UNIT ON/OFF key to OFF, then press and hold WARMER& COLDER keys, and press UNIT ON/OFF key.
	Control Set Too High	Check set-point. If high, adjust.
	Warm Food Load	Check contents of freezer for warm food load. Instruct customer.
	High Room Ambient	Instruct customer unit performs best between 60°F(16°C) and 90°F(32°C).
	Drawer Ajar a. Food product obstruction c. Drawer closer tripped backwards	 a. Move obstruction. c. Trip drawer closer forward
	Condenser Air Flow a. Dirty condenser b. Condenser fan blade obstructed or loose c. Condenser fan motor disconnected d. Condenser fan motor defective *(**NOTE:** Compressor must be running)*	 a. Clean condenser. b. Remove obstruction or tighten nut on motor shaft. c. Check continuity from motor to compressor. Reconnect / repair wire or connections. d. Check for 115V AC to motor, replace motor if defective.
	Light ON with Drawers Closed b. Faulty Reed Switch	 Check for 24 V AC to Reed Switch, depress switch and check for 24 V AC from Reed Switch. Replace Reed Switch if defective. *(**NOTE:** there are two Reed Switches)* **⚠ CAUTION** **Low Voltage Circuit. Do NOT apply 115V AC.**

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
(Continued) **BB. Warm Refrigerator Temp. in Both Drawers of BR-2 <u>without</u> "SERVICE" Flashing** *(See Pointers on previous page)*	**Evaporator Fan Fault** a. Fan blade obstructed or out of position b. Evaporator fan assembly out of position c. Evaporator. fan motor disconnected d. Evaporator fan motor defective *(**NOTE:** Compressor must be running)* e. Faulty Reed Switch *(**NOTE:** Compressor must be running)*	a. Move obstruction or reposition blade. b. Make sure evaporator fan assembly is in grooves of fan shroud and there is no play from front to back. Reposition if out of position. c. Check electrical connections from motor to P9 on control board. Reconnect / repair bad connections. d. Check for 115V AC at fan motor with Reed Switch depressed. Replace motor if defective. e. Check for 24V AC from P2 on control board to Reed Switch, depress switch and check for 24 V AC from Reed Switch. Replace Reed Switch if defective. *(**NOTE:** there are two Reed Switches.)* **⚠ CAUTION** **Low Voltage Circuit. Do NOT apply 115V AC.**
	Compartment Thermistor Misread	Check resistance of freezer compartment thermistor in Reed Switch for 30,000 to 33,000 ohms at 32°F. Replace Reed Switch if defective.
	Evaporator Heavily Frosted a. Drawer ajar b. Evaporator fan fault c. Compartment thermistor misread	a. See Drawer Ajar on previous page. b. See Evaporator Fan Fault above. c. See Thermistor Misread above.
	Power to Compressor Fault	Check for 115V AC at P14 on control board. Replace control board if defective.
	Sealed System Fault • Sealed System Leak • Sealed System Restriction • Inefficient Compressor	See Sealed System Troubleshooting Guide
CC. Warm or Normal Refrig. Temp's in Both Drawers of BR-2 with "SERVICE" Flashing on the LCD	**Evaporator Thermistor Disconnected or Shorted**	Check refrigerator evaporator thermistor electrical connections from thermistor to P1 on control board. Reconnect / repair connections. Check resistance of refrigerator evaporator thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.
DD. Warm or Normal Freezer Temp's in BF/I-2 with "EE" Displayed and "SERVICE" Flashing	**Freezer Compartment Thermistor Disconnected or Shorted**	Check freezer compartment thermistor electrical connections from thermistor to P1 on control board. Reconnect / repair connections. Check resistance of freezer compartment thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
EE. Warm or Normal Refrigerator Temp's in Both Drawers of BR-2 with "EE" Displayed and "SERVICE" Flashing	**Refrigerator Compartment Thermistor Disconnected or Shorted**	Check refrigerator compartment thermistor electrical connections from thermistor to P1 on control board. Reconnect / repair connections. Check resistance of refrigerator compartment thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.
FF. Warm or Normal Temp's in BF/I-2 or BR-2 with "E0" or "E3" Displayed	**Control Cable Disconnected or Faulty**	Check control cable and connections between control panel and Methode connector on back duct. Reconnect, repair or replace if defective.
	Disconnected or Faulty Wiring between Back Duct and Electronic Control Board	Check wiring from Methode connector on back duct to electronic control board. Reconnect, repair or replace if defective.
	Faulty Control Panel or Electronic Control Board	If unit passes all tests above, replace control panel and electronic control board.
GG. Warm Temp in Lower Drawer Only of BR-2 <u>without</u> "SERVICE" Flashing on the LCD **OR** **Inability to Achieve Different Temperatures Between the Two Drawers of BR-2**	**Baffle Control Fault** a. Baffle Control Stuck Closed b. Baffle Control Disconnected or Defective c. No Signal from Control Board to Baffle Control	a. Manually open and close baffle control. If movement is not smooth, replace baffle control. b. Check electrical connections from baffle control to P4 on control board. Reconnect / repair bad connections. c. If baffle moves freely and all wiring connections are good, allow compartment to warm, then adjust set-point for both compartments to 34°F. With compressor running, observe baffle control, if it does not open within three minutes, replace control board. **⚠ CAUTION** **Low Voltage Circuit. Do NOT apply 115V AC.**
HH. Product Temperature 10° or More Colder than Displayed Temperature	**Compartment Thermistor Misread**	Check resistance of compartment thermistor for 30,000 to 33,000 ohms at 32°F. Replace if defective.
II. 1. "Extremely" Cold Temperatures Displayed (1° to 7° in BR-2) (-21° to -15° in BF/I-2) **2. If outside U.S. - "Extremely" Warm Temperatures Displayed (34° to 45° in BR-2) (-5° to 5° in BF/I-2)**	**1. Control Set to Display Celsius but Customer Thought it Was Fahrenheit** **2. If Outside US - Control Set to Display Fahrenheit but Customer Thought it Was Celsius**	1. Control set to display Celsius but customer thought it was Fahrenheit. Switch unit OFF, then ON, then press & hold Bell key and UNIT ON/OFF key for 10 seconds. 2. If Outside US - Control set to display Fahrenheit but customer thought it was Celsius. Switch unit OFF, then ON, then press & hold Bell key and UNIT ON/OFF key for 10 seconds.
JJ. No Ice in BFI-2, "ICE" not Displayed on LCD	**Icemaker System Not Energized**	Press ICE key. " ICE" should appear on LCD.

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
KK. No Ice in BFI-2, "ICE" is Displayed on LCD	**Unit Has Not Run Long Enough**	Freezer must be 17°F for icemaker to operate, approximately 24 hours after unit installation. Instruct customer.
	Warm Freezer Temperatures *(**NOTE**: Freezer must be 17°F or colder for icemaker to function)*	See PROBLEM AA and DD earlier in Troubleshooting Guide.
	Shut-off Arm Stuck in Up/Off Position	Check shut-off arm, if stuck in up/off position, correct problem.
	Disconnected or Defective Water Valve	Check electrical connections and water connections at water valve, Reconnect / repair connections. Check resistance of water valve, 160 ohms. Replace if defective.
	Icemaker System Fault	Pressing ICE key to OFF, then to ON to bypass 45 minute dwell. Then, depress icemaker switch & manually start icemaker with jumper between ports “T” & “H”. Watch cycle of icemaker and see #1, #2 & #3 below.
		1. If icemaker motor starts and finishes cycle:
	a. Disconnected or damaged electrical connections at icemaker or water valve.	a. Check for 115V at valve during fill mode. If no 115V, inspect connections at icemaker and valve. Repair or replace connection.
	b. Defective icemaker	b. Check for 115V from icemaker during fill mode. If no power, replace icemaker.
		2. If icemaker motor starts but does not finish cycle:
	c. Defective icemaker	c. Replace icemaker.
		3. If icemaker motor does NOT start:
	d. Disconnected or damaged electrical connections at icemaker	d. Check for 115V to icemaker. If no power, repair electrical connection.
	e. Icemaker switch disconnected or faulty	e. Check power to/from icemaker switch. Repair connection, replace defective switch.
	f. Electrical connection at control board or control board defect	f. Check for 115V at control board (P-10). If no power, replace control board. If power, repair connection.
	Frozen Fill Tube	a. Check water supply pressure; must be constant 20-100 PSI. If not, instruct customer.
	a. Water Supply Problem	b. Check electrical connections at fill tube heater. Reconnect / repair connections. Check resistance of fill tube heater, 2300 - 2900 Ohms. Replace if defective.
	b. Disconnected or defective fill tube heater	

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
LL. Too Much Ice in BFI-2	**Ice Level Arm/Linkage Bent or Broken**	Inspect ice level arm, shut-off arm and linkage. Replace defective parts.
	Icemaker Faulty	With the ice level arm in the UP/OFF position, manually start icemaker by rotating the ejector blades clockwise by hand while turning the drive gear counterclockwise with a flat blade screwdriver. If icemaker motor starts with arm in the UP/OFF position, replace icemaker.
MM. Icemaker in BFI-2 Produces Hollow Cubes	**Freezer Too Cold, Cycles Icemaker Too Soon**	See PROBLEM "GG" earlier in Troubleshooting Guide.
	Not Enough Thermal-Mastic on Icemaker Thermostat	Inspect icemaker thermostat, apply more Thermal-Mastic to thermostat.
	Icemaker Defective	Replace Icemaker
NN. Icemaker in BFI-2 Produces Small Cubes	**Water Supply Problem**	Check water supply pressure; must be constant 20-100 PSI. If not, instruct customer.
	Icemaker Not Level	Check level of icemaker, adjust if needed
	Low Fill Adjustment on Icemaker	Check for 100-110 cc. fill (3.5-3.75 oz.). If low, increase fill by turning adjusting screw counterclockwise.
OO. Water in Ice Bucket / Clump of Ice in Ice Bucket of BFI-2	**Icemaker Not Level**	Check level of icemaker, adjust if needed
	High Fill Adjustment on Icemaker	Check for 100-110 cc. fill (3.5-3.75 oz.). If high, decrease fill by turning adjusting screw clockwise.
	Water Valve Energized Too Long	Check icemaker area for jammed ice cube, clear jam if present. Check levelness of icemaker; level if needed. Check position of fill cup. Reposition if in ice path. Check water supply pressure; must be constant 20-100 PSI. If not, instruct customer. Check water valve operation, opens when 115V AC is applied, closes completely when 115V AC is removed. Water valve Ohms = 160. Replace if defective.
	Intermittent Warm Freezer Temperatures	See PROBLEMs AA and DD earlier in Troubleshooting Guide.

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
PP. Membrane Switch on Control Board Malfunction	**Control Cable Disconnected or Defective**	Check control cable from control panel to display board. Check all pins on Methode Connector at back air duct. Reconnect / repair connections.
	Control Panel Assembly Defective (OR) No Signal Read at Control Board	See Membrane Switch/Ribbon Cable Test Procedures. If membrane switch passes all tests in Membrane Switch/Ribbon Cable Test Procedures, replace control board.
QQ. No Lighting	**No power to unit**	Check power to unit, plug unit in or switch supply circuit breaker ON.
	Unit switched OFF	Check for "OFF" displayed at LCD. If off, press UNIT ON/OFF key.
	Unit in Sabbath Mode	Press UNIT ON/OFF key.
	Defective or loose light bulb(s)	Install a known good light bulb.
	Reed Switch Disconnected or Defective	Check wire connections at Reed Switch. Reconnect/repair. Check for 24V AC to and from Reed Switch. Replace switch if defective. **⚠ CAUTION Low Voltage Circuit. Do NOT apply 115V AC.**
	Lighting System Wiring Disconnected or Defective	Check for 115V AC from light sockets back to P2 on control board. Reconnect/repair or replace defective components.
	No Power From Control Board (***NOTE:*** *See Unit in Sabbath Mode above.)*	Check for 115V AC at P2 on control board. Replace board if defective. (***NOTE:*** *See Unit in Sabbath Mode above.)*
RR. Lights Stay on When Drawers Are Closed (May be Accompanied by Drawer Ajar Alarm Bell)	**Drawer Ajar** a. Food product obstruction b. Drawer closer tripped backwards	 a. Move obstruction. b. Trip drawer closer forward
	Reed Switch Defective	Check wire connections at Reed Switch. Reconnect/repair. Check for 24V AC to and from Reed Switch. Replace switch if defective. **⚠ CAUTION Low Voltage Circuit. Do NOT apply 115V AC.**
SS. Drawer Not Able to Close Completely	**Drawer closer tripped backwards**	Trip drawer closer forward

PROBLEM	POSSIBLE CAUSE	TEST / ACTION
TT. Door or Drawers Uneven	**Improper Drawer Panel Installation**	The doors and drawers are non-adjustable. Instead, the door and/or drawer panels must be adjusted if there is an alignment problem. Refer to the Installation Manual and/or installation video for panel installation and adjustment.
	Unit Not Level	Check levelness of unit. If un-level, turn front leveling legs counterclockwise to raise front or clockwise to lower it. Rear levelers are adjusted from front of base by turning adjusting screw clockwise to raise rear or counterclockwise to lower it. Refer to the Installation Manual and/or installation video for complete installation and leveling instructions.

SEALED SYSTEM TROUBLESHOOTING / DIAGNOSTICS TABLES

Before tapping the sealed system to check pressures, see the General Troubleshooting Guide which begins on page 9-2. Take note of problems “A” through “D”, “AA” and “BB” in the General Troubleshooting Guide, and be sure to reference the “Pointers” in the first column under these problems. By initiating Diagnostic Mode and observing the evaporator temperatures, it may be determined that it is unnecessary to tap the sealed system. If needed, the table on the following page provides a quick reference for temperature/pressure correlation.

NOTE: *If entering the sealed system to check pressures, always use solder-on process valves. Do NOT use bolt-on process valves as they are prone to leak.*

NOTE: *Whenever servicing the sealed system, the high-side filter-drier must be replaced.*

NORMAL OPERATING PRESSURES		
Model	**Normal Low-Side Pressures**	**Normal High-Side Pressures**
700TC/I-2 Refrigerator	**5 psi to 30 psi**	**90 psi to 120 psi**
700TC/I-2 Freezer	**4” vacuum to 5 psi**	**90 psi to 120 psi**
700TR-2 Upper Refrig.	**5 psi to 30 psi**	**90 psi to 120 psi**
700TR-2 Lower Refrig.	**5 psi to 30 psi**	**90 psi to 120 psi**
700TF/I-2	**7” vacuum to 7 psi**	**90 psi to 120 psi**
700TF/I-2V	**7” vac. to 3 psi (at 4000 RPM)**	**90 psi to 120 psi**
700BR-2	**10 psi to 20 psi**	**90 psi to 120 psi**
700BF/I-2	**3” vacuum to 2 psi**	**90 psi to 120 psi**

PRESSURE INDICATIONS		
If low-side pressure is	***& high-side pressure is***	***possible problem is***
NORMAL	*NORMAL*	*MECHANICAL (see General Troubleshooting Guide)*
LOW	*LOW*	*LEAK*
LOW	*HIGH*	*RESTRICTION*
HIGH	*LOW*	*INEFFICIENT COMPRESSOR*
HIGH	*HIGH*	*OVER CHARGE*

EVAPORATOR TEMPERATURE / SEALED SYSTEM LOW-SIDE PRESSURE CORRELATION

NOTE: *The temperature/pressure table at right is for reference only. A unit's temperature/pressure correlation may differ from those listed due to: variations in evaporator thermistor location, set-points, where the sealed system is in the refrigeration cycle, etc.*
If a unit is experiencing temperature problems, it is recommended that you follow the "Pointers" in the first column of the General Troubleshooting Guide. After all mechanical and electrical components have been ruled out, sealed system pressures can be checked by applying solder-on process valves and referencing the preceding page. Do NOT use bolt-on process valves as they are prone to leak.
This table should only be used as a last quick check before entering the sealed system.

Temp °F	Pressure
-30	10” Vac
-25	7” Vac
-20	4” Vac
-15	0” Vac
-10	2 Psi
-5	4 Psi
0	7 Psi
5	9 Psi
10	12 Psi
15	15 Psi
20	18 Psi
25	22 Psi
30	26 Psi
35	30 Psi
40	35 Psi
45	40 Psi
50	45 Psi
55	51 Psi
60	57 Psi
65	64 Psi
70	71 Psi
75	78 Psi

TALL UNIT MEMBRANE SWITCH / RIBBON CABLE TEST

If the integrity of a Tall Unit control panel assembly is suspect, continuity tests should be performed at the membrane switch ribbon cable terminal housing. Begin by disconnecting the ribbon cable from the control board. Disengage the control board from the control panel. Remove the control panel assembly from the unit and place it on a solid surface.

How To Identify Pin 1 on Terminal Housing

The ribbon cable wires are exposed at the back of the terminal housing, but since there are two vendors of the membrane switch, determining the location of pin 1 is not always easy. To identify the pins, follow these guidelines:

1. If the terminal housing is BLUE, then pin 1 is closest to the arrow on the housing.
2. If the terminal housing is BLACK, check for continuity between the first two pins at each end of the housing while pushing UNIT ON/OFF key. If there is continuity, then pin 1 is at that end.

Test Procedure

NOTE: *Unless mentioned, the continuity tests described below are the same for all tall models. If any of the tests show failure, replace entire control panel assembly.*

1. Press no keys on the membrane switch. Check for continuity between all pin combinations. With no keys pressed, there should be no continuity between any of the pins.
2. Press UNIT ON/OFF key, there should be continuity between pins 1 & 2.
3. Press Door Ajar Alarm ON/OFF key, there should be continuity between pins 2 & 5.
4. Press ICE ON/OFF key, there should be continuity across pins 2 & 3.
5. Press Refrigerator (700TR-2 Upper) WARMER key, there should be continuity across pins 1 & 6.
6. Press Refrigerator (700TR-2 Upper) COLDER key, there should be continuity across pins 5 & 6.
7. With the Freezer (700TR-2 Lower) WARMER key depressed, there should be continuity across pins 3 & 4.
8. With the Freezer (700TR-2 Lower) COLDER key depressed, there should be continuity across pins 4 & 5.

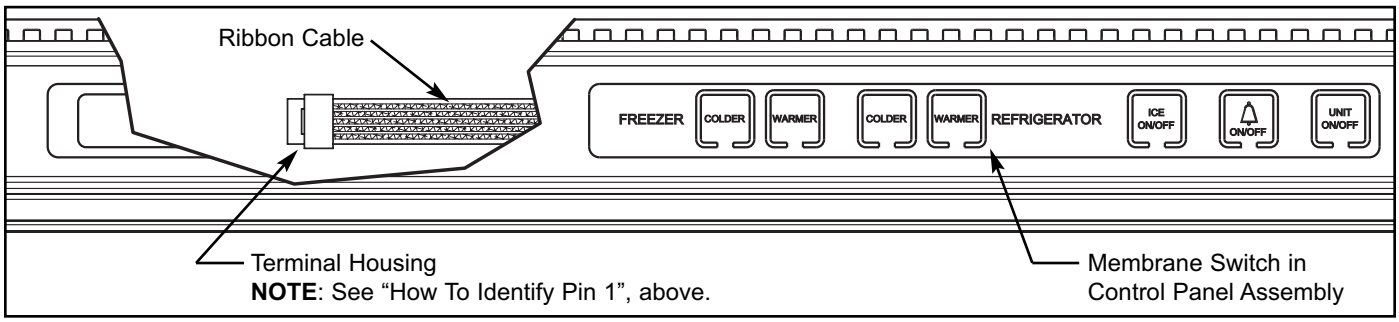


Figure 9-1. Tall Unit Control Panel Assembly with Cut-Away View to Show Ribbon Cable ***(700TCI-2 Shown)***

BASE UNIT MEMBRANE SWITCH / RIBBON CABLE TEST

If the integrity of a Base Unit control panel assembly is suspect, continuity tests should be performed at the membrane switch ribbon cable terminal housing. Begin by disconnecting the ribbon cable from the control board. Disengage the control board from the control panel. Remove the control panel assembly from the unit and place it on a solid surface.

How To Identify Pin 1 on Terminal Housing

The ribbon cable wires are exposed at the back of the terminal housing, but since there are two vendors of the membrane switch, determining the location of pin 1 is not always easy. To identify the pins, follow these guidelines:

1. If the terminal housing is BLUE, then pin 1 is closest to the arrow on the housing.
2. If the terminal housing is BLACK, check for continuity between the first two pins at each end of the housing while pushing UNIT ON/OFF key. If there is continuity, then pin 1 is at that end.

700BR-2 Membrane Switch/Ribbon Cable Test Procedure

1. Press no keys on the membrane switch. Check for continuity between all pin combinations. With no keys pressed, there should be no continuity between any of the pins.
2. Press UNIT ON/OFF key, there should be continuity across pins 3 & 4.
3. Press Door Ajar Alarm ON/OFF key, there should be continuity across pins 2 & 4.
4. Press Upper Drawer WARMER key, there should be continuity across pins 4 & 5.
5. Press Upper Drawer COLDER key, there should be continuity across pins 1 & 3.
6. Press Lower Drawer WARMER key, there should be continuity across pins 1 & 2.
7. Press Lower Drawer COLDER key, there should be continuity across pins 1 & 5.

NOTE: *If any of the tests show failure, replace entire control panel assembly.*

700BF/I-2 Membrane Switch/Ribbon Cable Test Procedure

1. Press no keys on the membrane switch. Check for continuity between all pin combinations. With no keys pressed, there should be no continuity between any of the pins.
2. Press UNIT ON/OFF key, there should be continuity across pins 3 & 4.
3. Press Door Ajar Alarm ON/OFF key, there should be continuity across pins 2 & 4.
4. Press ICE ON/OFF key, there should be continuity across pins 4 & 5.
5. Press WARMER key, there should be continuity across pins 1 & 2.
6. Press COLDER key, there should be continuity across pins 1 & 5.

NOTE: *If any of the tests show failure, replace entire control panel assembly.*

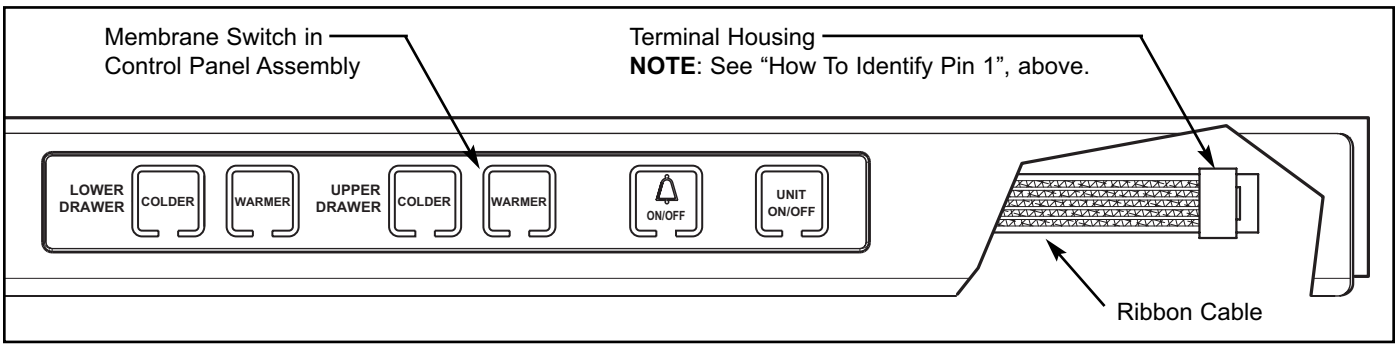


Figure 9-2. Base Unit Control Panel Assembly with Cut-Away View to Show Ribbon Cable ***(700BR-2 Shown)***

TALL UNIT DOOR HINGE OPERATION TEST PROCEDURES AND CORRECTIONS

1. If the door of a 700-2 tall unit will not close properly, first check for obstructions.
2. If there are no obstructions, open the door approximately 1" and let it go to see if it closes on its own. Repeat this three times.
3. If the door fails to close, remove the door gasket and repeat opening the door approximately 1", then let go. If the door does not close past parallel with the gasket seat, go to step #4 below. If the door does close past parallel with the gasket seat, this may indicate that the door gasket was binding on the hinge side. If so, the door hinges can be shimmed out slightly.

   To shim a hinge out, remove the door from the unit. Then, extract the hinge mounting bolts and pull the hinges from the unit. Place washers (part #6240360) behind the hinges. Reinstall the hinges and hinge mounting bolts. (See Figure 9-3) Replace the door gasket and reattach the door, then retest the door closing operation.

   NOTE: *Placing too many washers behind the hinges may cause air leaks. Check for air leaks after reattaching the door.*

4. If the door did not close past parallel with the gasket off, remove the top hinge cover and extract the one top door hinge screw closest to the pivot point of the hinge. Loosen the three remaining top hinge screws almost all the way out. Now, open the door approximately 1"and let go to see if it closes on its own.

   If door closes, install the 700 Series Hinge Shims Package, part #4202290. (See Figure 9-4) If the door fails to close, remove the three remaining screws from the top door hinge and check the closing action of the hinge on its own. If it seems weak, replace it. If it does not seem weak, reinstall the top door hinge screws and go to step #5 below.

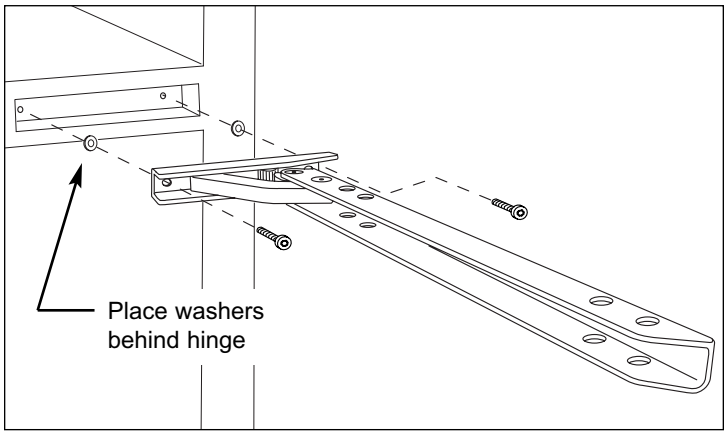


Figure 9-3. Shimming Hinge Out

5. If the door passed the test in step #4 above, remove the bottom hinge cover and extract the one bottom door hinge screw closest to the pivot point of the hinge. Loosen the three remaining bottom hinge screws almost all the way out. Now, open the door approximately 1" and let go to see if it closes on its own.

   If door closes, install 700 Series Hinge Shims Package, part #4202290. If door fails to close, remove the three remaining screws from the bottom door hinge and check the closing action of the hinge on its own. If it seems weak, replace it.

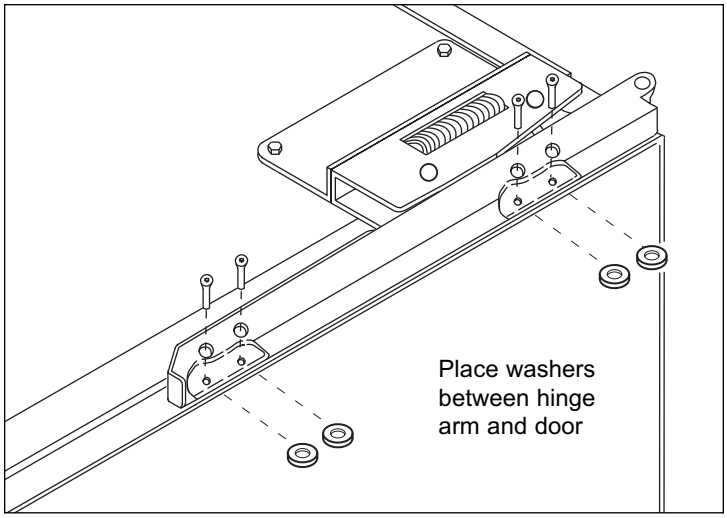


Figure 9-4. #4202290 Hinge Shim Package

SECTION 9
TECHNICAL DATA

Model 700TC/I-2

	REFRIGERATOR	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Always check serial tag for exact charge*	5.5 oz.	9 oz.
NORMAL OPERATING PRESSURES		
Low Side	5 psi to 30 psi	4” vacuum to 5 psi
High Side	90 psi to 110 psi	90 psi to 120 psi
COMPRESSOR ***NOTE:*** *Always check current parts price list for possible substitutions.*		
Service Part No.	4201880	4201860
Manufacturer	Embraco	Embraco
Mfg. Model No.	EMI30HER	FGS70 A
Original Compressor/Service Compressor Amps	1.2 / 1.2	1.2 / 1.2
Original Compressor/Service Compressor BTU/H	280 / 280	715 / 715
DEFROST METHOD	“Off Cycle Defrost” Evap > 38°F before Compressor ON.	“Adaptive Defrost” Defrost intervals and duration vary by unit use. 5 minute compressor delay after each defrost.
DEFROST TERMINATOR		
Cut-In Temp.	-------	30°F / -1°C
Cut-Out Temp.	-------	70°F / 21°C
DEFROST HEATER		
Watts	-------	400
Amps	-------	3.48
Resistance/Ohms	-------	30 - 38
DRAIN TROUGH HEATER		
Watts	-------	80
Amps	-------	0.70
Resistance/Ohms	-------	155 - 175
FILL TUBE HEATER		
Watts	-------	5.1
Amps	-------	.044
Resistance/Ohms	-------	2300 - 2900
WATER VALVE		
Watts	-------	50
Amps	-------	0.42
Resistance/Ohms (Inductive)	-------	160
THERMISTORS (Evap & Compartment) Resistance/Ohms at 32°F / 0°C	30000 - 33000	30000 - 33000

Model 700TR-2

	REFRIG. *(Upper)*	REFRIG. *(Lower)*
CHARGE (R-134a Refrigerant) ***NOTE:*** *Always check serial tag for exact charge*	5 oz.	5.5 oz.
NORMAL OPERATING PRESSURES		
Low Side	5 psi to 30 psi	5 psi to 30 psi
High Side	90 psi to 110 psi	90 psi to 110 psi
COMPRESSOR ***NOTE:*** *Always check current parts price list for possible substitutions.*		
Service Part No.	4201880	4201880
Manufacturer	Embraco	Embraco
Mfg. Model No.	EMI30HER	EMI30HER
Original Compressor/Service Compressor Amps	1.2 / 1.2	1.2 / 1.2
Original Compressor/Service Compressor BTU/H	280 / 280	280 / 280
DEFROST METHOD	"Off Cycle Defrost" Evap > 38°F before Compressor ON.	"Off Cycle Defrost" Evap > 38°F before Compressor ON.
DEFROST TERMINATOR		
Cut-In Temp.	-------	-------
Cut-Out Temp.	-------	-------
DEFROST HEATER		
Watts	-------	-------
Amps	-------	-------
Resistance/Ohms	-------	-------
DRAIN TROUGH HEATER		
Watts	-------	-------
Amps	-------	-------
Resistance/Ohms	-------	-------
FILL TUBE HEATER		
Watts	-------	-------
Amps	-------	-------
Resistance/Ohms	-------	-------
WATER VALVE		
Watts	-------	-------
Amps	-------	-------
Resistance/Ohms (Inductive)	-------	-------
THERMISTORS (Evap & Compartment) Resistance/Ohms at 32°F / 0°C	30000 - 33000	30000 - 33000

Model 700TF/I-2

	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Always check serial tag for exact charge*	9 oz.
NORMAL OPERATING PRESSURES	
Low Side	7" vacuum to 7 psi
High Side	90 psi to 120 psi
COMPRESSOR ***NOTE:*** *Always check current parts price list for possible substitutions.*	
Service Part No.	4201870
Manufacturer	Americold
Mfg. Model No.	RG108
Original/Service Compressor Amps	1.2 / 1.2
Original/Service Compressor BTU/H	715 / 715
DEFROST METHOD	"Adaptive Defrost" Defrost intervals and duration vary by unit use. 5 minute compressor delay after each defrost.
DEFROST TERMINATOR	
Cut-In Temp.	30°F / -1°C
Cut-Out Temp.	70°F / 21°C
DEFROST HEATER	
Watts	400
Amps	3.48
Resistance/Ohms	30 - 38
DRAIN TROUGH HEATER	
Watts	80
Amps	0.7
Resistance/Ohms	155 - 175
FILL TUBE HEATER	
Watts	5.1
Amps	0.044
Resistance/Ohms	2300 - 2900
WATER VALVE	
Watts	50
Amps	0.42
Resistance/Ohms (Inductive)	160
THERMISTORS (Evap & Compartment) Resistance/Ohms at 32°F / 0°C	30000 - 33000

Model 700TF/I-2V

	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Always check serial tag for exact charge*	9.5 oz.
NORMAL OPERATING PRESSURES	
Low Side (at 4000 RPM / Max Speed)	7” vacuum to 3 psi
High Side (at 4000 RPM / Max Speed)	90 psi to 120 psi
COMPRESSOR ***NOTE:*** *Always check current parts price list for possible substitutions.*	
Service Part No.	4203760
Manufacturer	Embraco
Mfg. Model No.	VEGT-7H
Original/Service Compressor Amps (at 4000 RPM / Max Speed)	2.0 / 2.0
Original/Service Compressor BTU/H (at 4000 RPM / Max Speed)	850 / 850
DEFROST METHOD	“Adaptive Defrost” Defrost intervals and duration vary by unit use. 10 minute compressor delay after each defrost.
DEFROST TERMINATOR	
Cut-In Temp.	30°F / -1°C
Cut-Out Temp.	70°F / 21°C
DEFROST HEATER	
Watts	400
Amps	3.48
Resistance/Ohms	30 - 38
DRAIN TROUGH HEATER	
Watts	80
Amps	0.7
Resistance/Ohms	155 - 175
FILL TUBE HEATER	
Watts	5.1
Amps	0.044
Resistance/Ohms	2300 - 2900
WATER VALVE	
Watts	50
Amps	0.42
Resistance/Ohms (Inductive)	160
THERMISTORS (Evap & Compartment) Resistance/Ohms at 32°F / 0°C	30000 - 33000

Model 700BR-2

	REFRIGERATOR
CHARGE (R-134a Refrigerant) ***NOTE:*** *Always check serial tag for exact charge*	6 oz.
NORMAL OPERATING PRESSURES	
Low Side	10 psi to 20 psi
High Side	90 psi to 120 psi
COMPRESSOR ***NOTE:*** *Always check current parts price list for possible substitutions.*	
Service Part No.	4201880
Manufacturer	Embraco
Mfg. Model No.	EMI30HER
Original/Service Compressor Amps	0.9 / 0.9
Original/Service Compressor BTU/H	280 / 280
DEFROST METHOD	"Off Cycle Defrost" Evap > 38°F before Compressor ON.
DEFROST TERMINATOR	
Cut-In Temp.	30°F / -1°C
Cut-Out Temp.	70°F / 21°C
DEFROST HEATER	
Watts	490
Amps	4.26
Resistance/Ohms	25 - 29
DRAIN TUBE HEATER	
Watts	7
Amps	0.061
Resistance/Ohms	1700 - 2100
FILL TUBE HEATER	
Watts	5.1
Amps	0.044
Resistance/Ohms	2300 - 2900
WATER VALVE	
Watts	50
Amps	0.42
Resistance/Ohms (Inductive)	160
THERMISTORS (Evap & Compartment) Resistance/Ohms at 32°F / 0°C	30000 - 33000

Model 700BF/I-2

	FREEZER
CHARGE (R-134a Refrigerant) ***NOTE:*** *Always check serial tag for exact charge*	6 oz.
NORMAL OPERATING PRESSURES	
Low Side	3” vacuum to 2 psi
High Side	90 psi to 120 psi
COMPRESSOR ***NOTE:*** *Always check current parts price list for possible substitutions.*	
Service Part No.	4201860
Manufacturer	Embraco
Mfg. Model No.	FGS70 A
Original/Service Compressor Amps	1.2 / 1.2
Original/Service Compressor BTU/H	715 / 715
DEFROST METHOD	“Adaptive Defrost” Defrost intervals and duration vary by unit use. 5 minute compressor delay after each defrost.
DEFROST TERMINATOR	
Cut-In Temp.	30°F / -1°C
Cut-Out Temp.	70°F / 21°C
DEFROST HEATER	
Watts	490
Amps	4.26
Resistance/Ohms	25 - 29
DRAIN TUBE HEATER	
Watts	7
Amps	0.061
Resistance/Ohms	1700 - 2100
FILL TUBE HEATER	
Watts	5.1
Amps	0.044
Resistance/Ohms	2300 - 2900
WATER VALVE	
Watts	50
Amps	0.42
Resistance/Ohms (Inductive)	160
THERMISTORS	
(Evap & Compartment) Resistance/Ohms at 32°F / 0°C	30000 - 33000

SECTION 11

WIRING DIAGRAMS AND SCHEMATICS

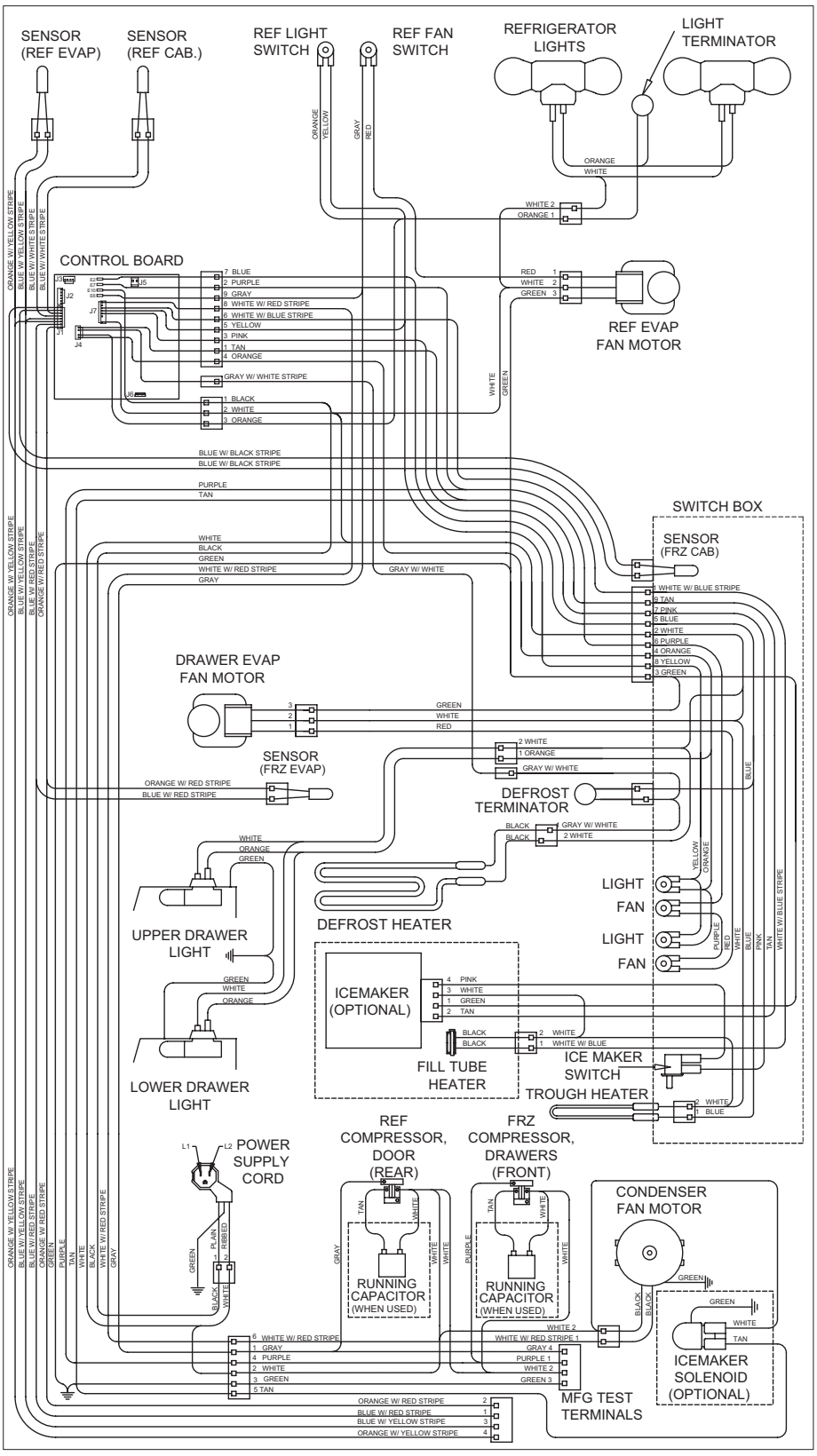
NOTE: Due to our Continuous Improvement Program, it is recommended to always use the wiring diagram & schematic supplied with the unit, located in an envelope in the compressor area. This section is for referencing prior to servicing or if the wiring diagram & schematic are missing from the unit.

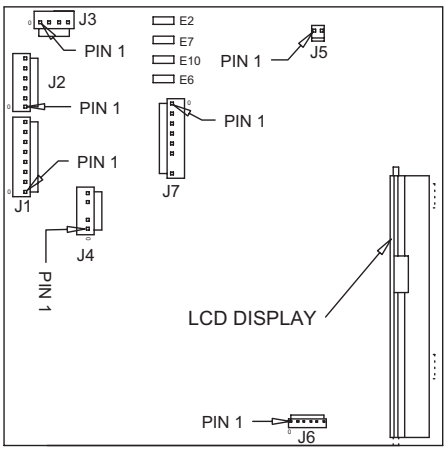
WIRING DIAGRAM
MODEL: 700TC/I-2

(Prior to Serial #1755730)

⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.





CONTROL BOARD DETAIL

CONTROL BOARD SUMMARY

	CIRCUIT	DESCRIPTION	FUNCTION	COLOR
		120 VOLT CIRCUITS		
E2	DEF HTR	DEFROST HEATER	POWERS DEFROST CIRCUIT	BLUE
E7	FCOMP	FRZ COMPRESSOR	POWERS FRZ COMPRESSOR (DRAWERS)	PURPLE
E10	L1	POWER IN	POWER INTO BOARD	BLACK
E6	RCOMP	REF COMPRESSOR	POWERS REF COMPRESSOR (DOOR)	GRAY
J7-1	C FAN	CONDENSER FAN	POWERS CONDENSER FAN	WHITE/RED
J7-2	E FAN	NOT USED		
J7-3	IACCC	ICE MAKER ACC (FILL TUBE)	POWERS FILL TUBE HEATER AND ACCESSORIES	WHITE/BLUE
J7-4	LITES	LIGHTS	POWERS LIGHTS	YELLOW
J7-5	ICE	ICE MAKER	POWERS ICE MAKER	PINK
J7-6		NOT USED		
J7-7		NOT USED(NO PIN)		
J7-8	NEU	NEUTRAL	NEUTRAL INTO BOARD	WHITE
J4-1	F DR	DRAWER LIGHTS SENSE	SENSES IF EITHER DRAWER OPEN	ORANGE
J4-2	R DR	DOOR LIGHTS SENSE	SENSES IF DOOR OPEN	ORANGE
J4-3		NOT USED(NO PIN)		
J4-4		DEF SENSOR	SENSES WHEN DEF HEATER SHUTS OFF	GRAY/WHITE
J4-5		ICE MAKER VALVE SENSOR	SENSES WATER VALVE ACTIVATION	TAN
		LOW VOLTAGE THERMISTOR CIRCUITS		
J1-1	EVAP FRZ	FRZ EVAP	SENSES FRZ EVAP TEMP (DRAWERS)	ORANGE/RED
J1-2	EVAP FRZ	FRZ EVAP	SENSES FRZ EVAP TEMP (DRAWERS)	BLUE/RED
J1-3	EVAP REF	REF EVAP	SENSES REF EVAP TEMP	ORANGE/YEL
J1-4	EVAP REF	REF EVAP	SENSES REF EVAP TEMP	BLUE/YELLOW
J1-5	REF	REF COMPARTMENT	SENSES REF CABINET TEMP	BLUE/WHITE
J1-6	REF	REF COMPARTMENT	SENSES REF CABINET TEMP	BLUE/WHITE
J1-7	FRZ	FRZ COMPARTMENT	SENSES FRZ CABINET TEMP (DRAWERS)	BLUE/BLACK
J1-8	FRZ	FRZ COMPARTMENT	SENSES FRZ CABINET TEMP (DRAWERS)	BLUE/BLACK

PART NUMBER 3756640 REV D

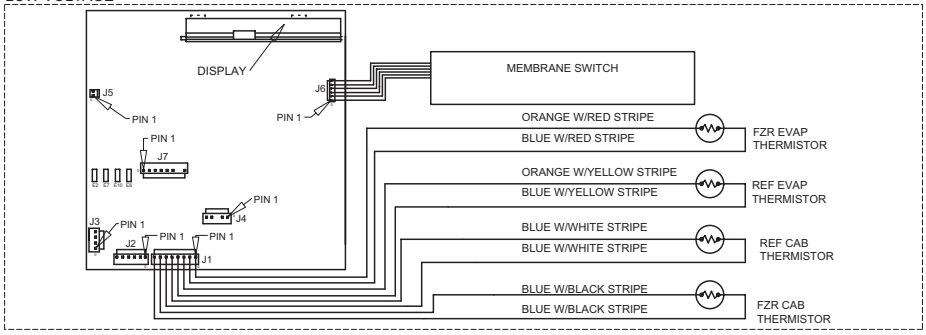
WIRING SCHEMATIC MODEL: 700 TC/I-2

(Prior to Serial #1755730)

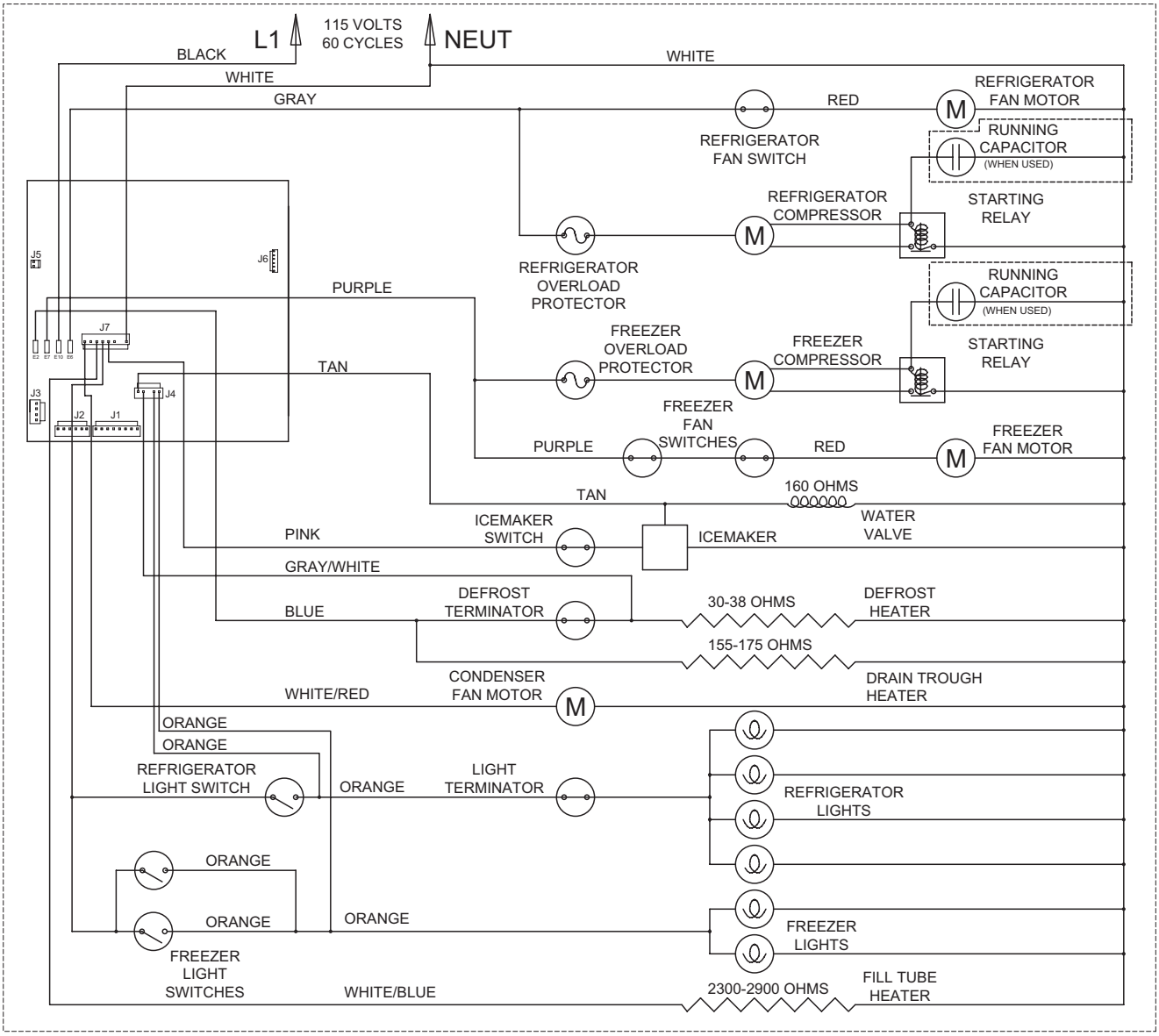
⚠ WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.

LOW VOLTAGE



HIGH VOLTAGE



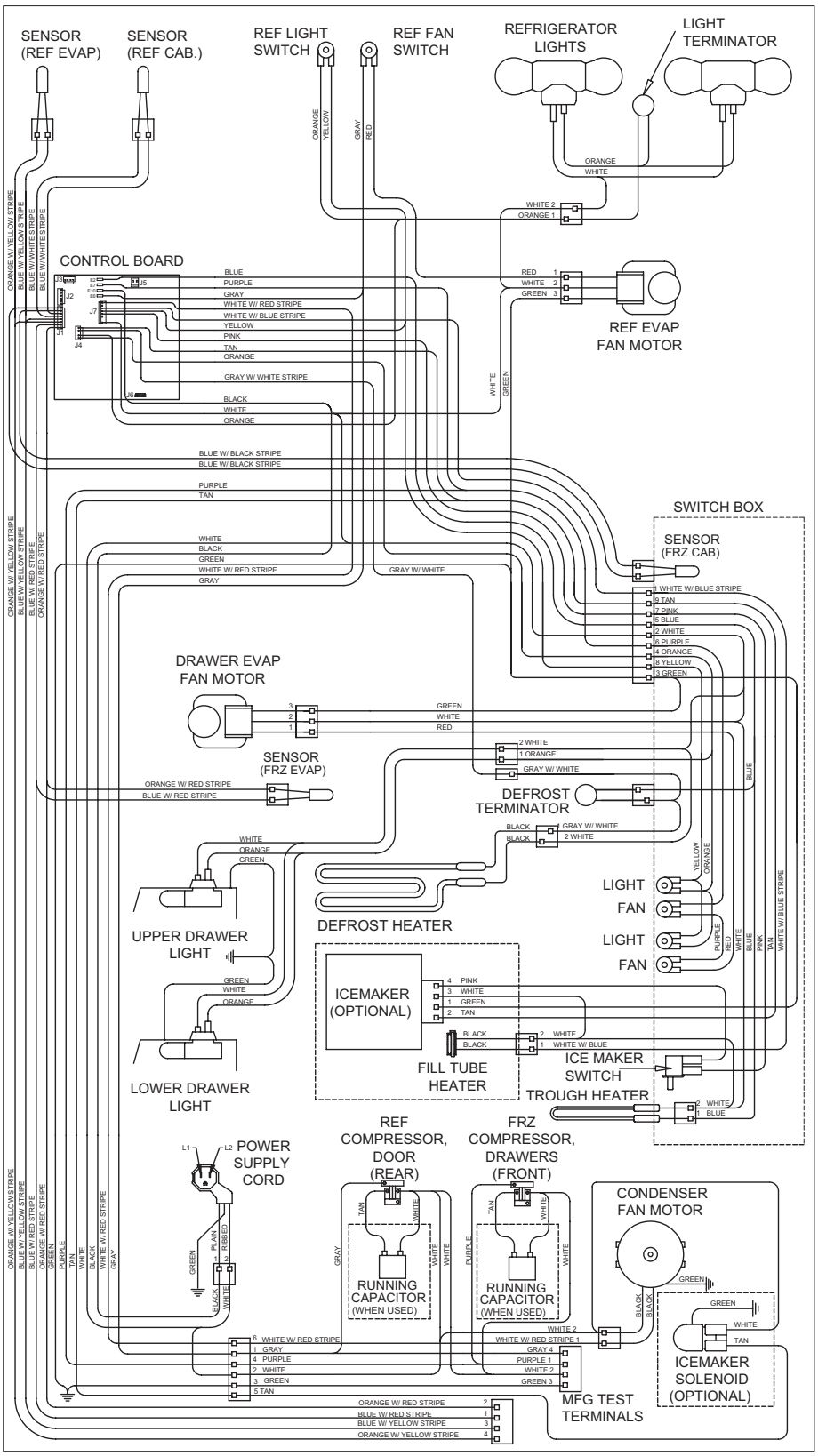
PART NUMBER 3756640 REV D

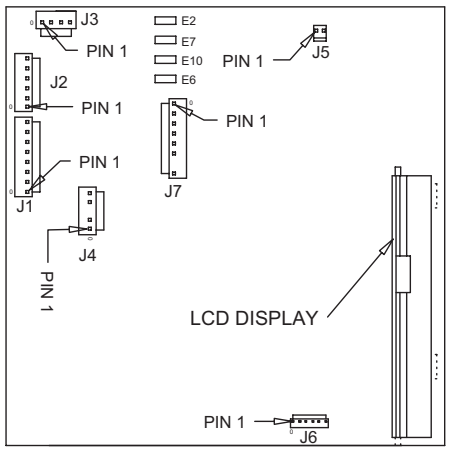
WIRING DIAGRAM
MODEL: 700TC/I-2

(Starting With Serial #1755730)

WARNING

-This wiring information is provided for use by qualified service personnel only.
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.





CONTROL BOARD DETAIL

CONTROL BOARD SUMMARY

	CIRCUIT	DESCRIPTION	FUNCTION	COLOR
		120 VOLT CIRCUITS		
E2	DEF HTR	DEFROST HEATER	POWERS DEFROST CIRCUIT	BLUE
E7	FCOMP	FRZ COMPRESSOR	POWERS FRZ COMPRESSOR (DRAWERS)	PURPLE
E10	L1	POWER IN	POWER INTO BOARD	BLACK
E6	RCOMP	REF COMPRESSOR	POWERS REF COMPRESSOR (DOOR)	GRAY
J7-1	C FAN	CONDENSER FAN	POWERS CONDENSER FAN	WHITE/RED
J7-2	E FAN			
J7-3	IACCC	ICE MAKER ACC (FILL TUBE)	POWERS FILL TUBE HEATER AND ACCESSORIES	WHITE/BLUE
J7-4	LITES	LIGHTS	POWERS LIGHTS	YELLOW
J7-5	ICE	ICE MAKER	POWERS ICE MAKER	PINK
J7-6		NOT USED		
J7-7		NOT USED(NO PIN)		
J7-8	NEU	NEUTRAL	NEUTRAL INTO BOARD	WHITE
J4-1	F DR	DRAWER LIGHTS SENSE	SENSES IF EITHER DRAWER OPEN	ORANGE
J4-2	R DR	DOOR LIGHTS SENSE	SENSES IF DOOR OPEN	ORANGE
J4-3		NOT USED(NO PIN)		
J4-4		DEF SENSOR	SENSES WHEN DEF HEATER SHUTS OFF	GRAY/WHITE
J4-5		ICE MAKER VALVE SENSOR	SENSES WATER VALVE ACTIVATION	TAN
		LOW VOLTAGE THERMISTOR CIRCUITS		
J1-1	EVAP FRZ	FRZ EVAP	SENSES FRZ EVAP TEMP (DRAWERS)	ORANGE/RED
J1-2	EVAP FRZ	FRZ EVAP	SENSES FRZ EVAP TEMP (DRAWERS)	BLUE/RED
J1-3	EVAP REF	REF EVAP	SENSES REF EVAP TEMP	ORANGE/YEL
J1-4	EVAP REF	REF EVAP	SENSES REF EVAP TEMP	BLUE/YELLOW
J1-5	REF	REF COMPARTMENT	SENSES REF CABINET TEMP	BLUE/WHITE
J1-6	REF	REF COMPARTMENT	SENSES REF CABINET TEMP	BLUE/WHITE
J1-7	FRZ	FRZ COMPARTMENT	SENSES FRZ CABINET TEMP (DRAWERS)	BLUE/BLACK
J1-8	FRZ	FRZ COMPARTMENT	SENSES FRZ CABINET TEMP (DRAWERS)	BLUE/BLACK

PART NUMBER 3756640 REV E

WIRING SCHEMATIC MODEL: 700 TC/I-2

(Starting with Serial #1755730)

⚠ WARNING

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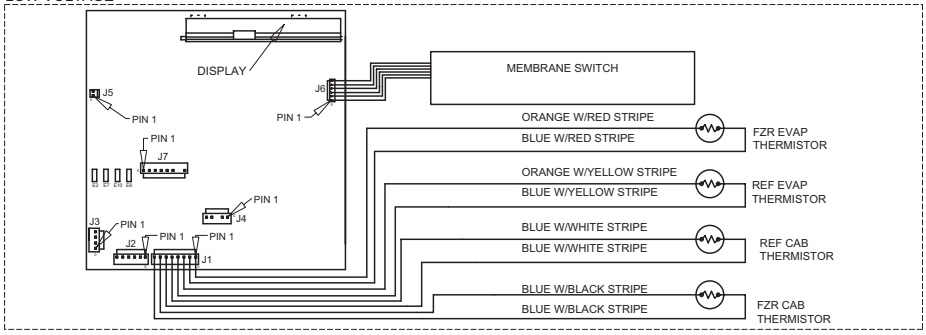
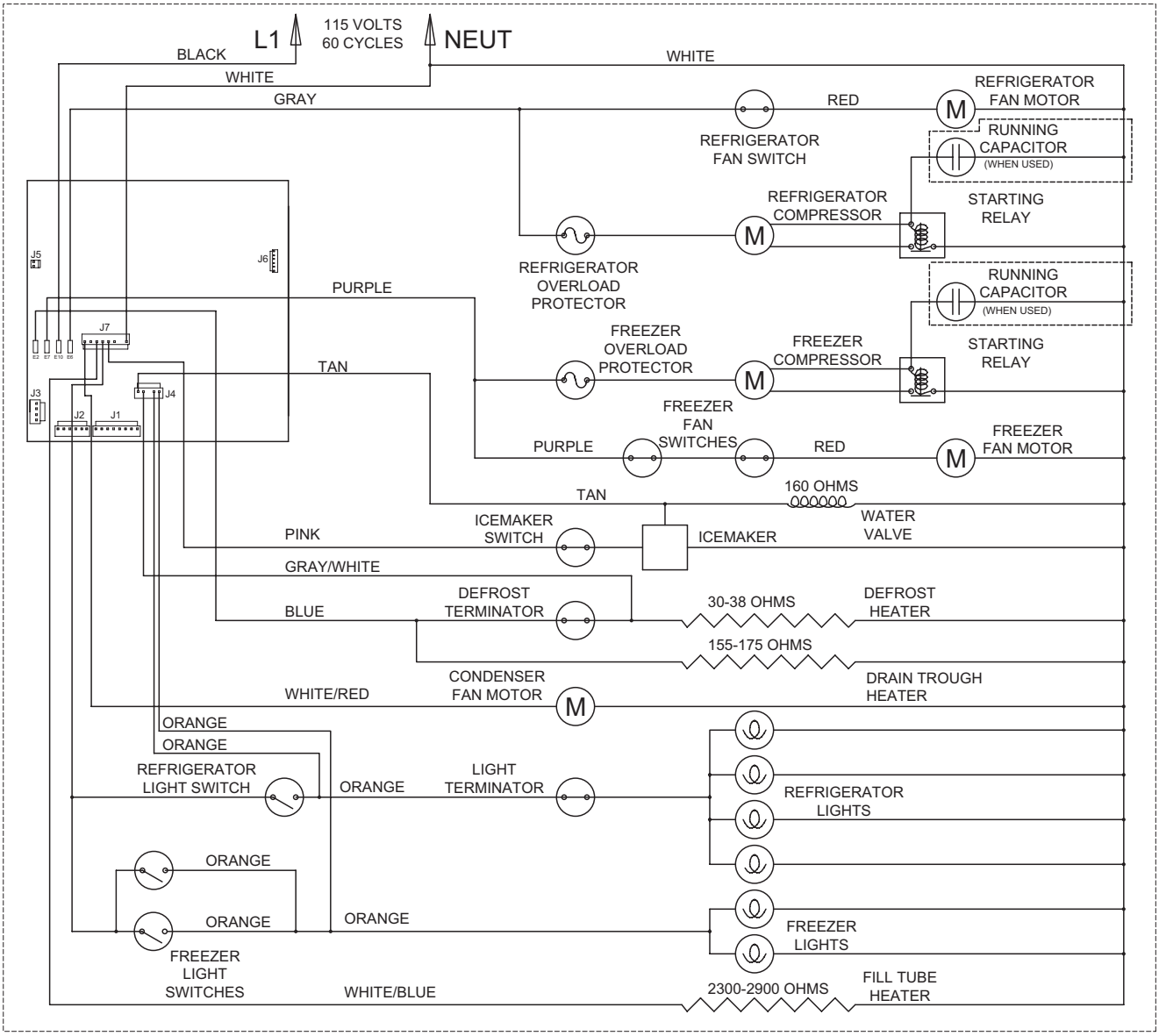
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.

LOW VOLTAGE



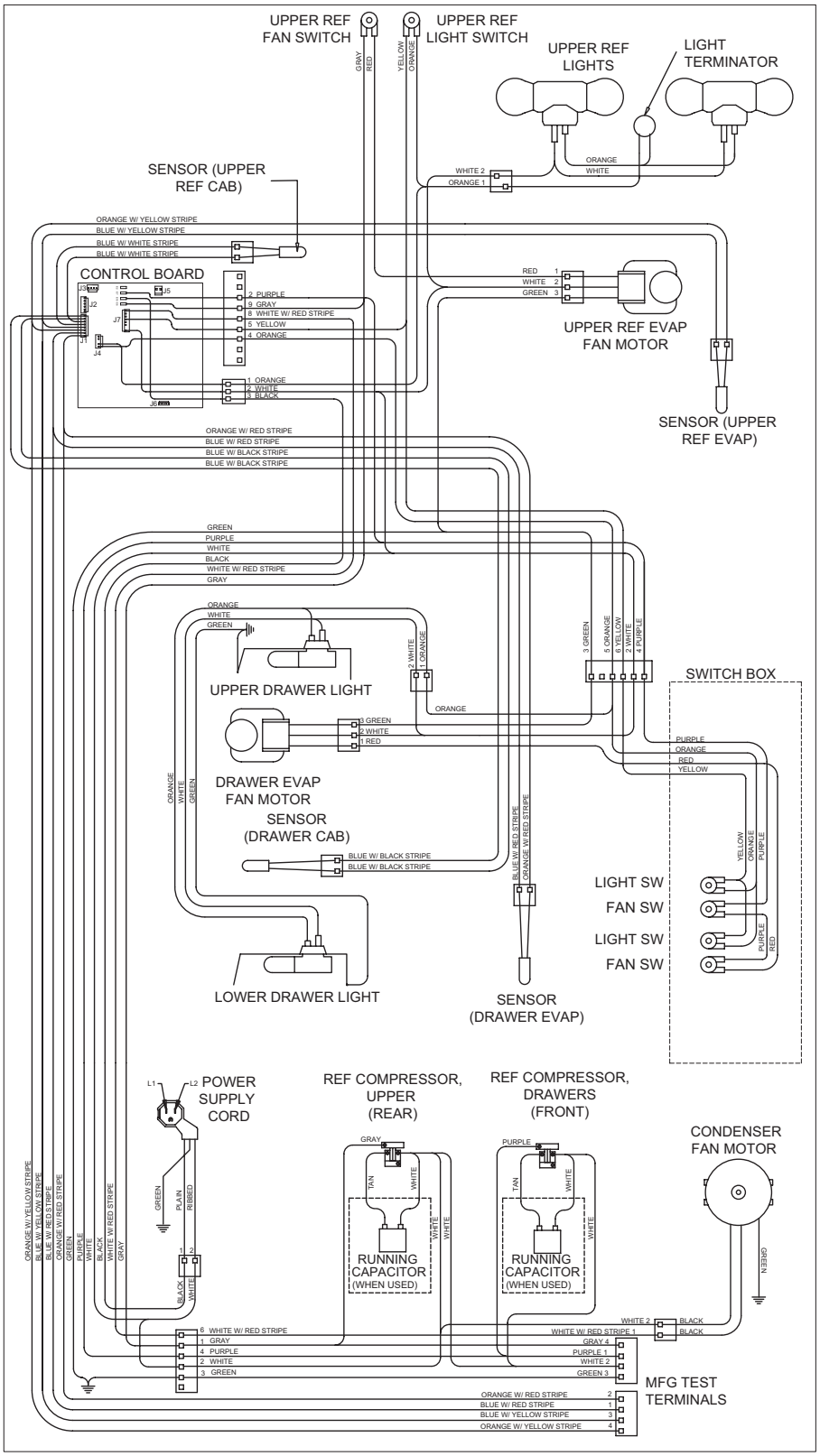
HIGH VOLTAGE



PART NUMBER 3756640 REV E

WIRING DIAGRAM
MODEL: 700TR-2

(Prior to Serial #1755266)



⚠ WARNING

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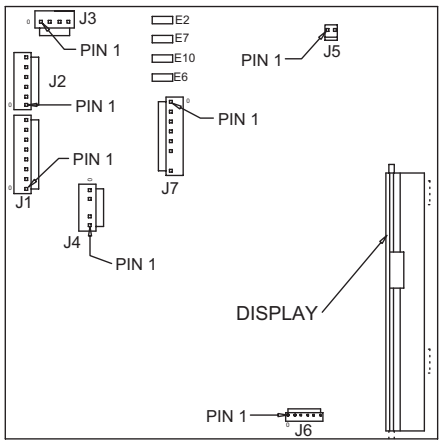
-Disconnect appliance from electrical supply before beginning service.
-Be sure all grounding devices are connected when service is complete.
-Failure to observe the above warnings may result in severe electrical shock.



CONTROL BOARD DETAIL

CONTROL BOARD SUMMARY

CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	120 VOLT CIRCUITS		
E2	NOT USED		
E7	DRAWER REF COMPRESSOR	POWERS REF COMP FOR 2 DRAWER SECTION	PURPLE
E10	POWER IN	POWER INTO BOARD	BLACK
E6	UPPER REF COMPRESSOR	POWERS UPPER REF COMP	GRAY
J7-1	CONDENSER FAN	POWERS CONDENSER FAN	WHITE/RED
J7-2	NOT USED		
J7-3	NOT USED		
J7-4	LITES	POWERS LIGHTS	YELLOW
J7-5	NOT USED		
J7-6	NOT USED		
J7-7	NOT USED (NO PIN)		
J7-8	NEU	NEUTRAL INTO BOARD	WHITE
J4-1	F DR	SENSES IF EITHER DRAWER OPEN	ORANGE
J4-2	R DR	SENSES IF DOOR OPEN	ORANGE
J4-3		NOT USED(NO PIN)	
J4-4		NOT USED	
J4-5		NOT USED	
LOW VOLTAGE THERMISTOR CIRCUITS			
J1-1	EVAP FRZ	SENSES DRAWER EVAP TEMP	ORANGE/RED
J1-2	EVAP FRZ	SENSES DRAWER EVAP TEMP	BLUE/RED
J1-3	EVAP REF	SENSES UPPER REF EVAP TEMP	ORANGE/YEL
J1-4	EVAP REF	SENSES UPPER REF EVAP TEMP	BLUE/YELLOW
J1-5	REF	SENSES UPPER REF CABINET TEMP	BLUE/WHITE
J1-6	REF	SENSES UPPER REF CABINET TEMP	BLUE/WHITE
J1-7	FRZ	SENSES DRAWER CABINET TEMP	BLUE/BLACK
J1-8	FRZ	SENSES DRAWER CABINET TEMP	BLUE/BLACK

PART NUMBER 3756660 REV C

WIRING SCHEMATIC MODEL: 700TR-2

(Prior to Serial #1755266)

WARNING

-This wiring information is provided for use by qualified service personnel only.
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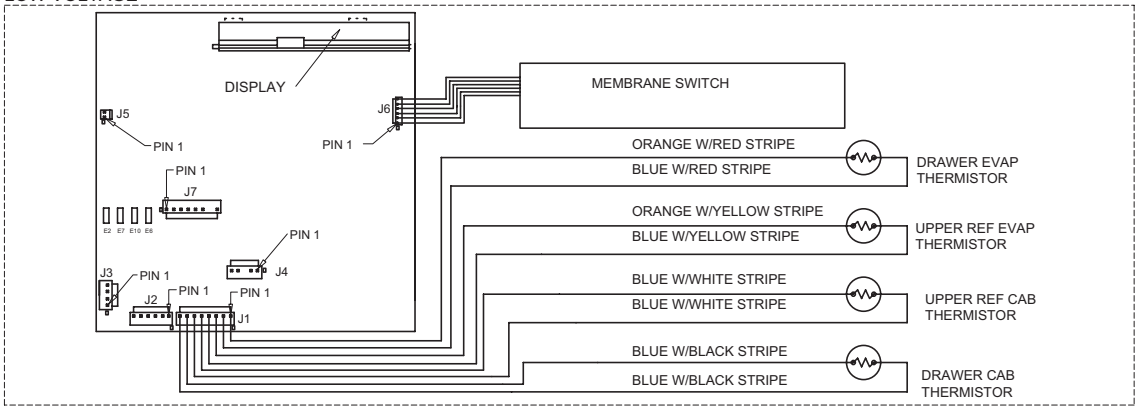
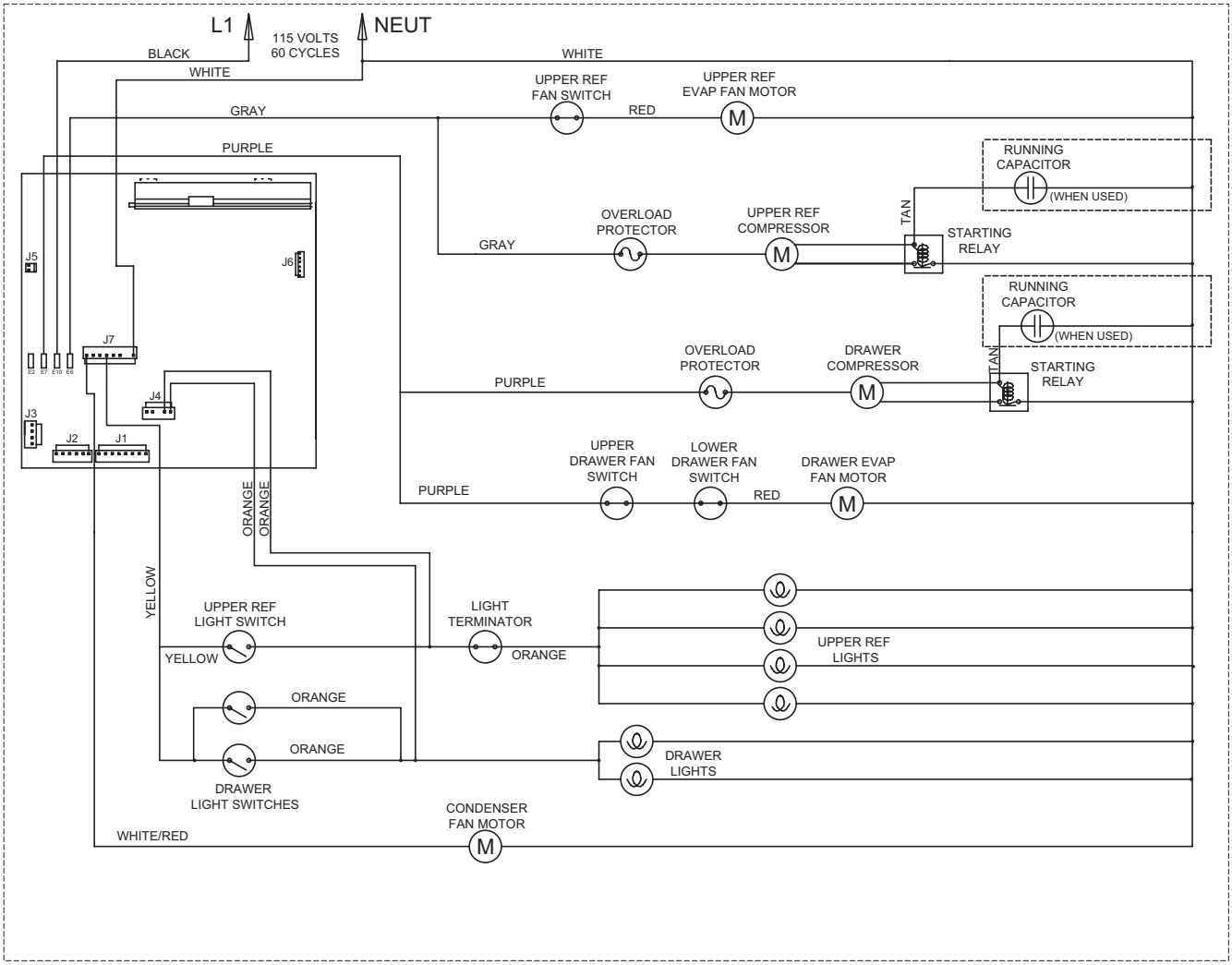
LOW VOLTAGE



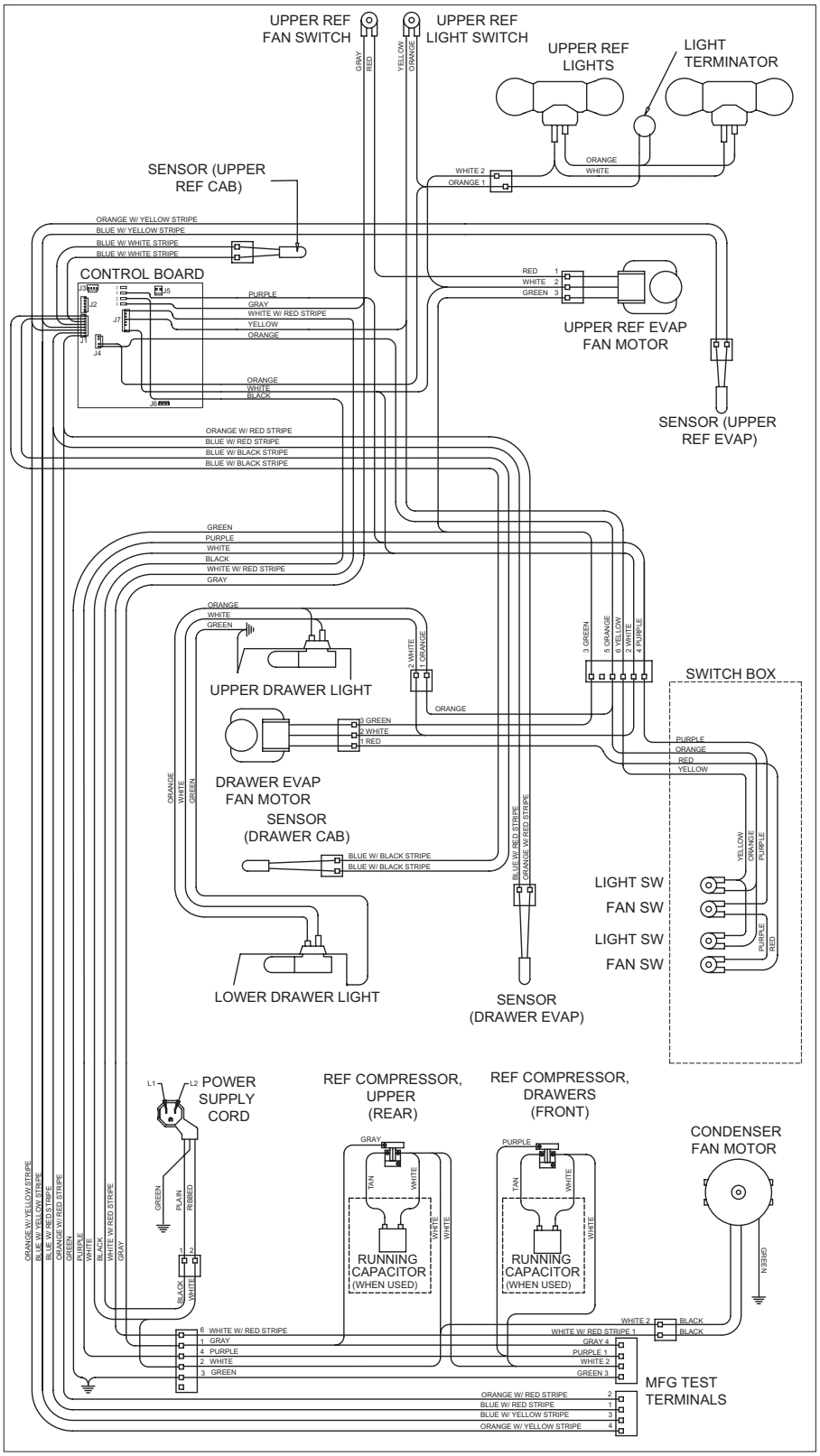
HIGH VOLTAGE



PART NUMBER 3756660 REV C

WIRING DIAGRAM
MODEL: 700TR-2

(Starting with Serial #1755266)



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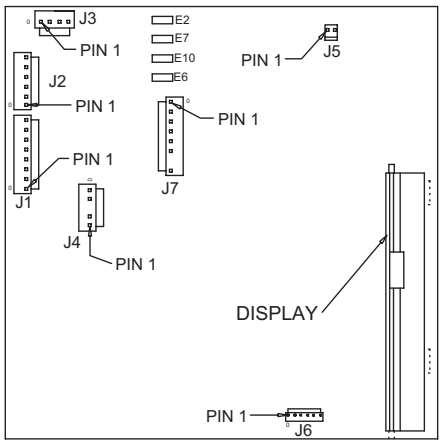

CONTROL BOARD DETAIL

CONTROL BOARD SUMMARY

CIRCUIT	DESCRIPTION	FUNCTION	COLOR
	120 VOLT CIRCUITS		
E2	NOT USED		
E7	DRAWER REF COMPRESSOR	POWERS REF COMP FOR 2 DRAWER SECTION	PURPLE
E10	POWER IN	POWER INTO BOARD	BLACK
E6	UPPER REF COMPRESSOR	POWERS UPPER REF COMP	GRAY
J7-1	CONDENSER FAN	POWERS CONDENSER FAN	WHITE/RED
J7-2	NOT USED		
J7-3	NOT USED		
J7-4	LIGHTS	POWERS LIGHTS	YELLOW
J7-5	NOT USED		
J7-6	NOT USED		
J7-7	NOT USED (NO PIN)		
J7-8	NEUTRAL	NEUTRAL INTO BOARD	WHITE
J4-1	DRAWER LIGHTS SENSE	SENSES IF EITHER DRAWER OPEN	ORANGE
J4-2	DOOR LIGHTS SENSE	SENSES IF DOOR OPEN	ORANGE
J4-3	NOT USED(NO PIN)		
J4-4	NOT USED		
J4-5	NOT USED		
LOW VOLTAGE THERMISTOR CIRCUITS			
J1-1	EVAP FRZ	SENSES DRAWER EVAP TEMP	ORANGE/RED
J1-2	DRAWER EVAP	SENSES DRAWER EVAP TEMP	BLUE/RED
J1-3	EVAP FRZ	SENSES UPPER REF EVAP TEMP	ORANGE/YEL
J1-4	EVAP REF	SENSES UPPER REF EVAP TEMP	BLUE/YELLOW
J1-5	REF	SENSES UPPER REF CABINET TEMP	BLUE/WHITE
J1-6	REF	SENSES UPPER REF CABINET TEMP	BLUE/WHITE
J1-7	FRZ	SENSES DRAWER CABINET TEMP	BLUE/BLACK
J1-8	FRZ	SENSES DRAWER CABINET TEMP	BLUE/BLACK

PART NUMBER 3756660 REV D

WIRING SCHEMATIC MODEL: 700TR-2

(Starting with Serial #1755266)

WARNING

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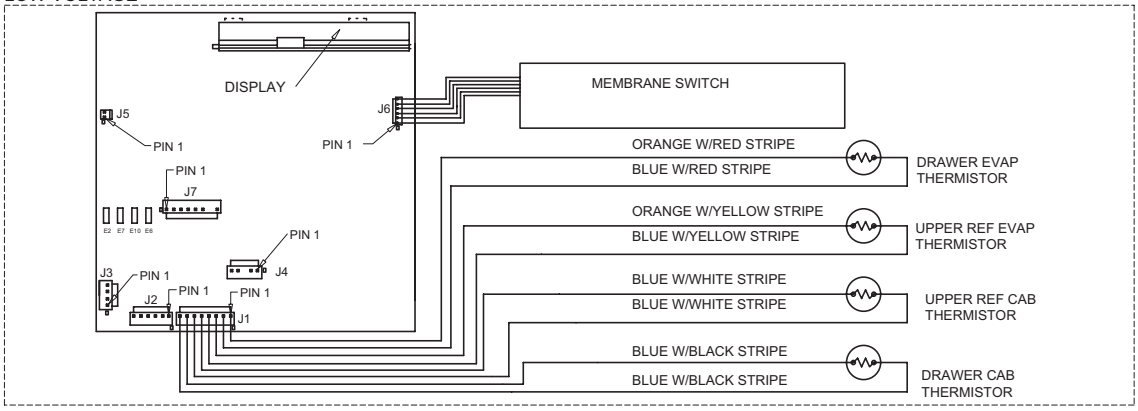
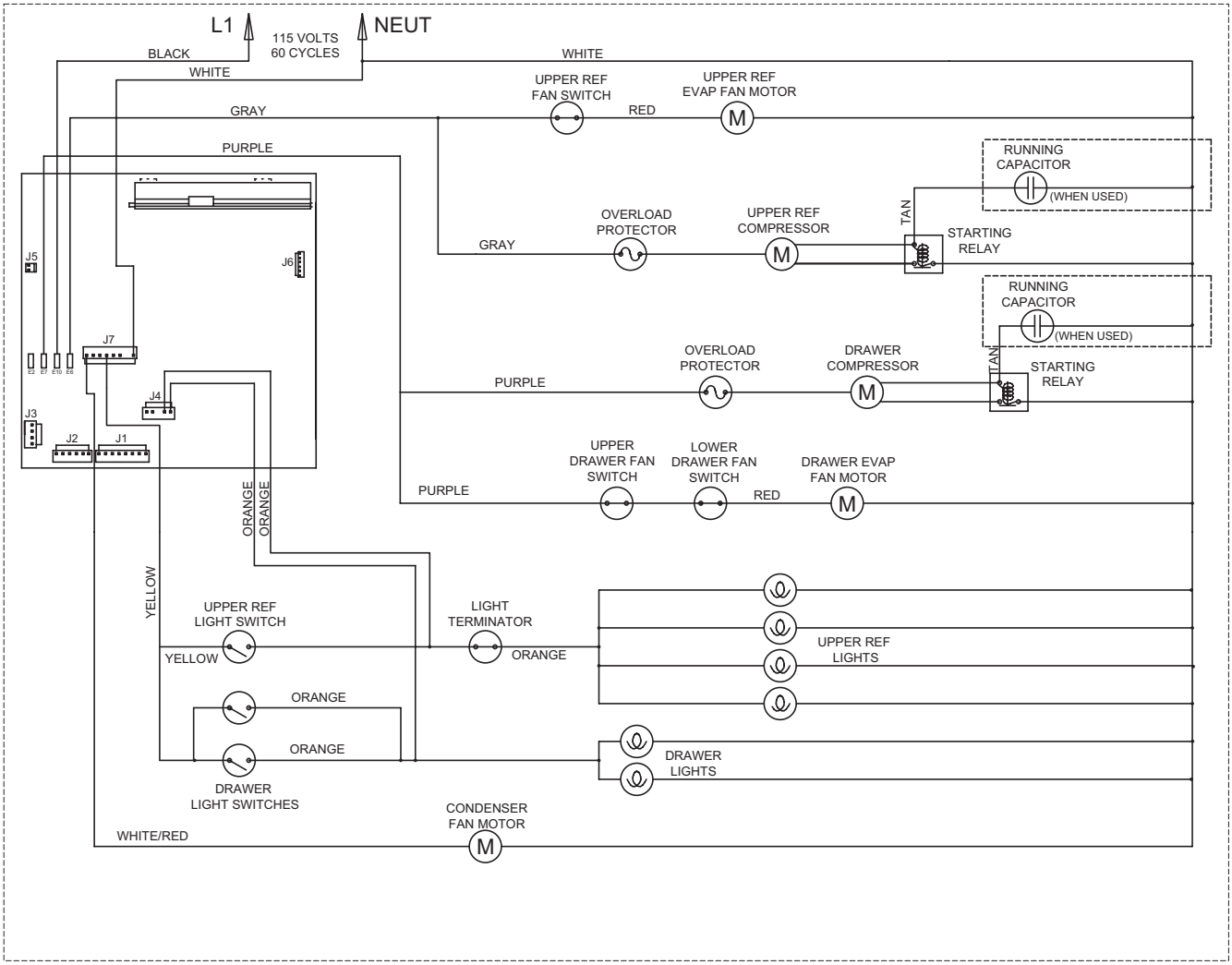
LOW VOLTAGE



HIGH VOLTAGE



PART NUMBER 3756660 REV D

WIRING DIAGRAM
MODEL: 700 TF/I-2

(Prior to Serial #1752891)

⚠ WARNING

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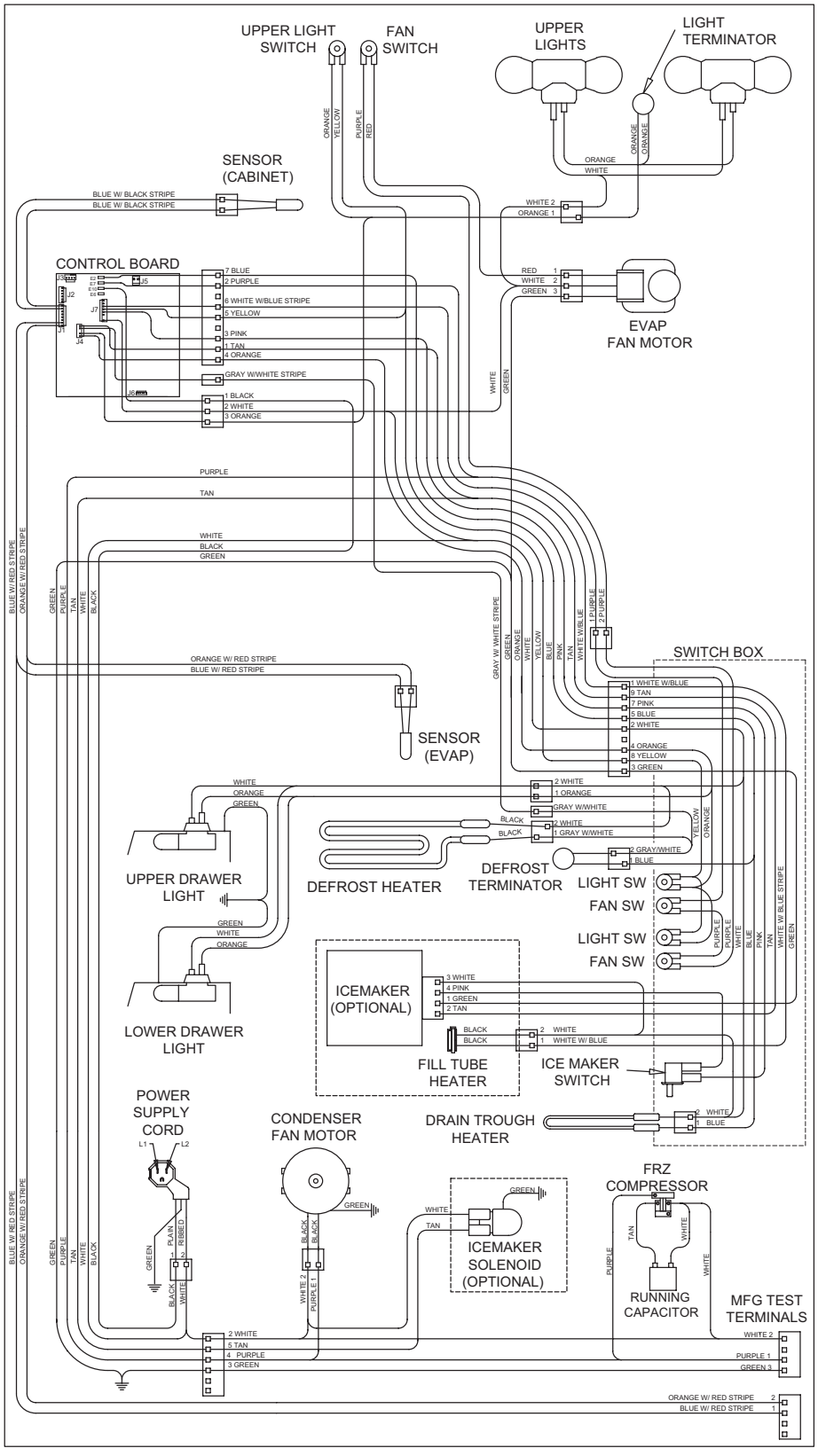

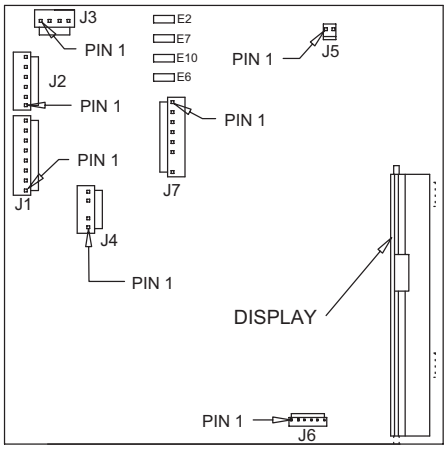

CONTROL BOARD DETAIL

CONTROL BOARD SUMMARY

	CIRCUIT	DESCRIPTION	FUNCTION	COLOR
		120 VOLT CIRCUITS		
E2	DEF HTR	DEFROST HEATER	POWERS DEFROST CIRCUIT	BLUE
E7	FCOMP	COMPRESSOR	POWERS COMPRESSOR	PURPLE
E10	L1	POWER IN	POWER INTO BOARD	BLACK
E6		NOT USED		GRAY
J7-1		NOT USED		WHITE/RED
J7-2		NOT USED		
J7-3	IACC	ICE MAKER ACC (FILL TUBE)	POWERS FILL TUBE HEATER AND ACCESSORIES	WHITE/BLUE
J7-4	LITES	LIGHTS	POWERS LIGHTS	YELLOW
J7-5	ICE	ICE MAKER	POWERS ICE MAKER	PINK
J7-6		NOT USED		
J7-7		NOT USED (NO PIN)		
J7-8	NEU	NEUTRAL	NEUTRAL INTO BOARD	WHITE
J4-1	F DR	DRAWER LIGHTS SENSE	SENSES IF EITHER DRAWER OPEN	ORANGE
J4-2	R DR	DOOR LIGHTS SENSE	SENSES IF DOOR OPEN	ORANGE
J4-3		NOT USED (NO PIN)		
J4-4		DEFROST HEATER SENSOR	SENSES IF DEFROST HEATER IS ON OR OFF	GRAY/WHITE
J4-5		ICE MAKER VALVE SENSOR	SENSES IF WATER VALVE IS ON OR OFF	TAN
LOW VOLTAGE THERMISTOR CIRCUITS				
J1-1	EVAP FRZ	EVAP SENSOR	SENSES FRZ EVAP TEMP	ORANGE/RED
J1-2	EVAP FRZ	EVAP SENSOR	SENSES FRZ EVAP TEMP	BLUE/RED
J1-3		NOT USED		
J1-4		NOT USED		
J1-5		NOT USED		
J1-6		NOT USED		
J1-7	FRZ	CABINET SENSOR	SENSES FRZ CABINET TEMP	BLUE/BLACK
J1-8	FRZ	CABINET SENSOR	SENSES FRZ CABINET TEMP	BLUE/BLACK

PART NUMBER 3756680 REV D

WIRING SCHEMATIC
MODEL: 700 TF/I-2

(Prior to Serial #1752891)

⚠ WARNING

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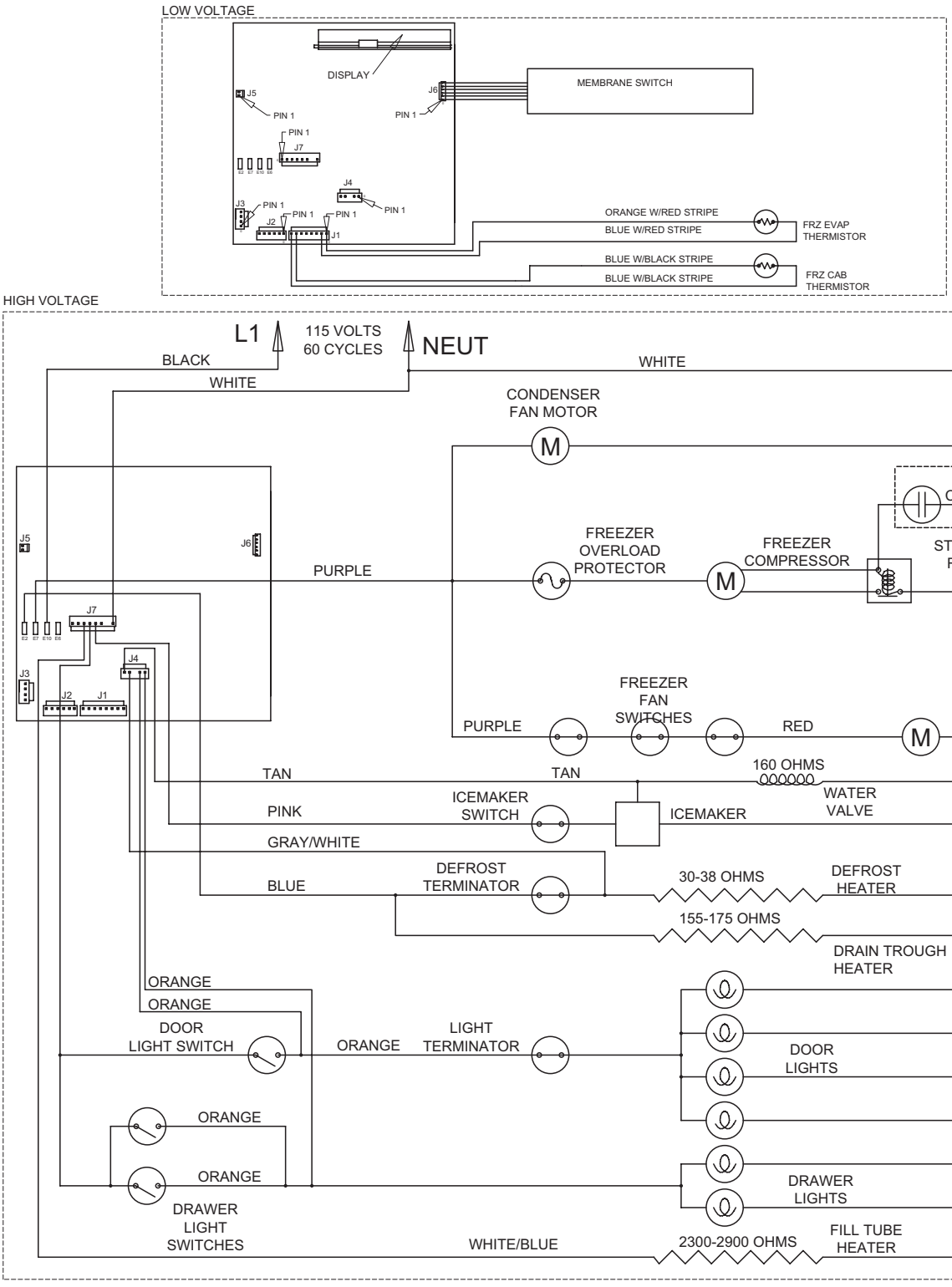

PART NUMBER 3756680 REV D

WIRING DIAGRAM
MODEL: 700 TF/I-2

(From Serial #1752891 to Serial #1898164)

WARNING

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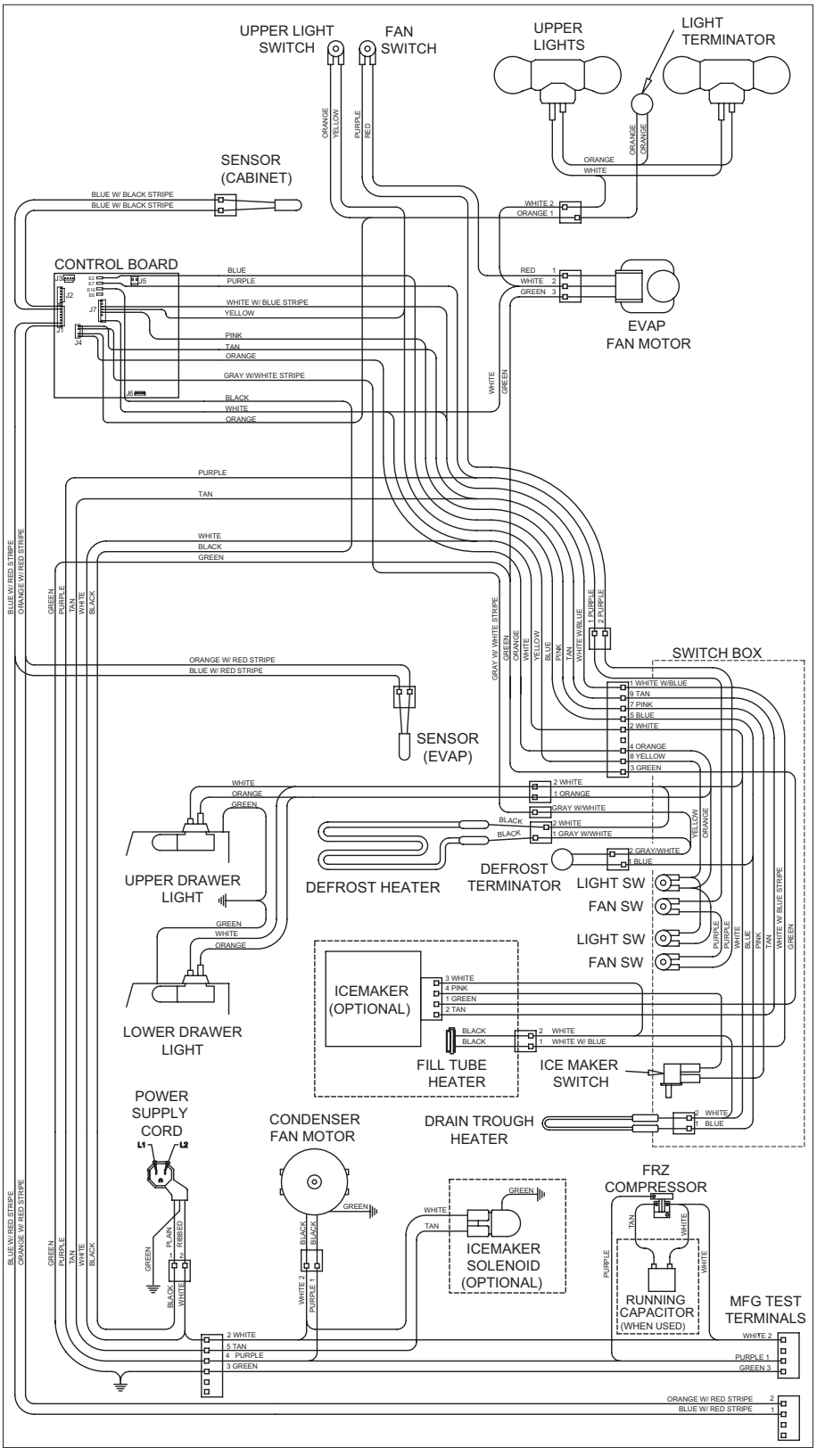

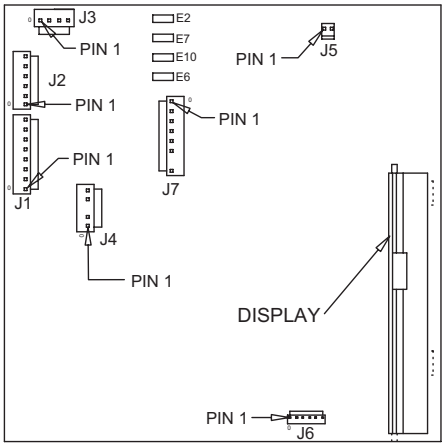

CONTROL BOARD DETAIL

CONTROL BOARD SUMMARY

	CIRCUIT	DESCRIPTION	FUNCTION	COLOR
		120 VOLT CIRCUITS		
E2	DEF HTR	DEFROST HEATER	POWERS DEFROST CIRCUIT	BLUE
E7	FCOMP	COMPRESSOR	POWERS COMPRESSOR	PURPLE
E10	L1	POWER IN	POWER INTO BOARD	BLACK
E6		NOT USED		GRAY
J7-1		NOT USED		WHITE/RED
J7-2	IACC	ICE MAKER ACC (FILL TUBE)	POWERS FILL TUBE HEATER AND ACCESSORIES	WHITE/BLUE
J7-3	LITES	LIGHTS	POWERS LIGHTS	YELLOW
J7-4	I/C	ICE MAKER	POWERS ICE MAKER	PINK
J7-5		NOT USED		
J7-6		NOT USED		
J7-7		NOT USED(NO PIN)		
J7-8	NEU	NEUTRAL	NEUTRAL INTO BOARD	WHITE
J4-1	F DR	DRAWER LIGHTS SENSE	SENSES IF EITHER DRAWER OPEN	ORANGE
J4-2	R DR	DOOR LIGHTS SENSE	SENSES IF DOOR OPEN	ORANGE
J4-3		NOT USED(NO PIN)		
J4-4		DEFROST HEATER SENSOR	SENSES IF DEFROST HEATER IS ON OR OFF	GRAY/WHITE
J4-5		ICE MAKER VALVE SENSOR	SENSES IF WATER VALVE IS ON OR OFF	TAN
LOW VOLTAGE THERMISTOR CIRCUITS				
J1-1	EVAP FRZ	EVAP SENSOR	SENSES FRZ EVAP TEMP	ORANGE/RED
J1-2	EVAP FRZ	EVAP SENSOR	SENSES FRZ EVAP TEMP	BLUE/RED
J1-3		NOT USED		
J1-4		NOT USED		
J1-5		NOT USED		
J1-6		NOT USED		
J1-7	FRZ	CABINET SENSOR	SENSES FRZ CABINET TEMP	BLUE/BLACK
J1-8	FRZ	CABINET SENSOR	SENSES FRZ CABINET TEMP	BLUE/BLACK

PART NUMBER 3756680 REV E

WIRING SCHEMATIC
MODEL: 700 TF/I-2

(From Serial #1752891 to Serial #1898164)

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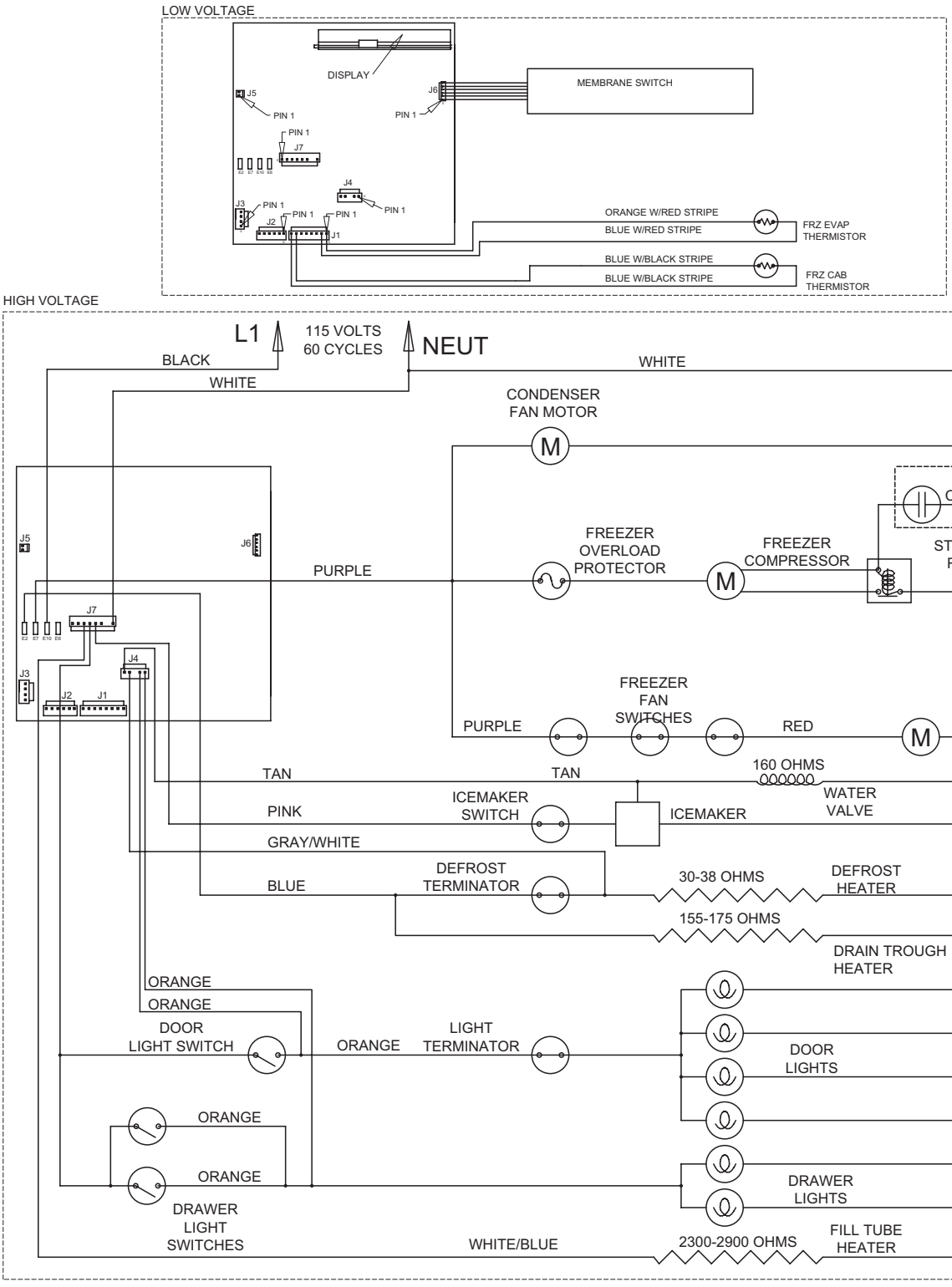

PART NUMBER 3756680 REV E

WIRING DIAGRAM
MODEL: 700 TF/I-2V

(Starting with Serial #1898164)

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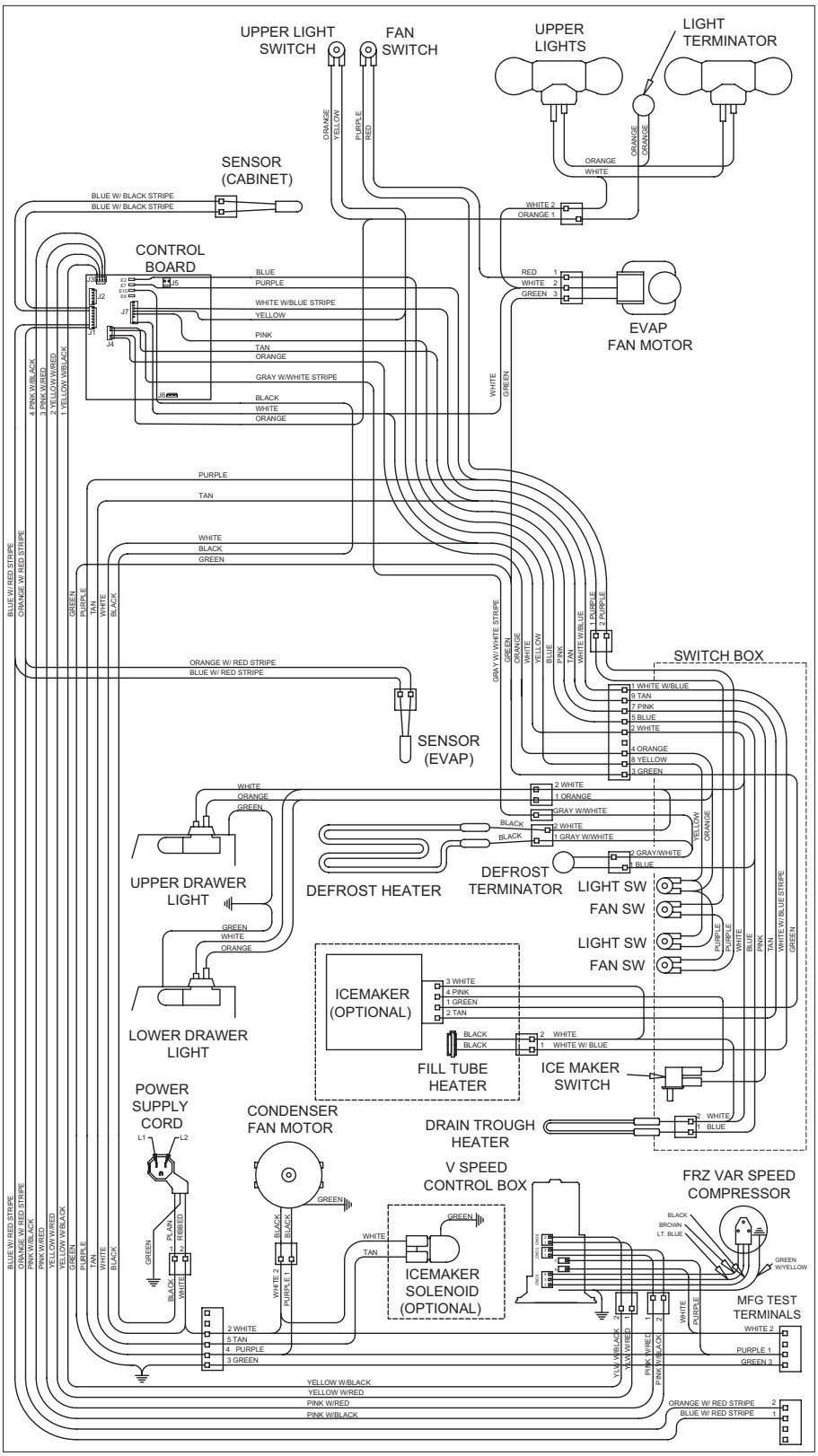

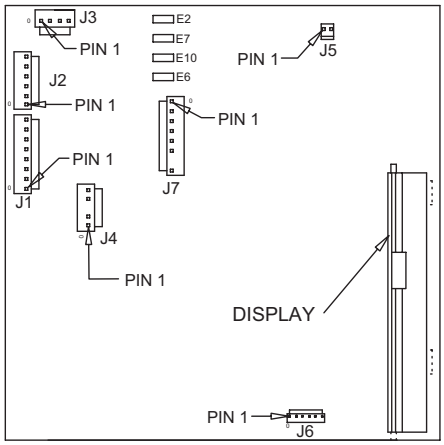

CONTROL BOARD DETAIL

CONTROL BOARD SUMMARY

	CIRCUIT	DESCRIPTION	FUNCTION	COLOR
		120 VOLT CIRCUITS		
E2	DEF HTR	DEFROST HEATER	POWERS DEFROST CIRCUIT	BLUE
E7	FCOMP	COMPRESSOR	POWERS COMPRESSOR	PURPLE
E10	L1	POWER IN	POWER INTO BOARD	BLACK
E6		NOT USED		GRAY
J7-1		NOT USED		WHITE/RED
J7-2		NOT USED		
J7-3	IACC	ICE MAKER ACC (FILL TUBE)	POWERS FILL TUBE HEATER AND ACCESSORIES	WHITE/BLUE
J7-4	LITES	LIGHTS	POWERS LIGHTS	YELLOW
J7-5	ICE	ICE MAKER	POWERS ICE MAKER	PINK
J7-6		NOT USED		
J7-7		NOT USED(NO PIN)		
J7-8	NEU	NEUTRAL	NEUTRAL INTO BOARD	WHITE
J4-1	F DR	DRAWER LIGHTS SENSE	SENSES IF EITHER DRAWER OPEN	ORANGE
J4-2	R DR	DOOR LIGHTS SENSE	SENSES IF DOOR OPEN	ORANGE
J4-3		NOT USED(NO PIN)		
J4-4		DEFROST HEATER SENSOR	SENSES IF DEFROST HEATER IS ON OR OFF	GRAY/WHITE
J4-5		ICE MAKER VALVE SENSOR	SENSES IF WATER VALVE IS ON OR OFF	TAN

LOW VOLTAGE CIRCUITS		
J1-1	EVAP FRZ	EVAP SENSOR
J1-2	EVAP FRZ	EVAP SENSOR
J1-3 THRU 6		NOT USED
J1-7 & 8	FRZ	CABINET SENSOR
J3-1	OUT(-)	SERIAL OUT
J3-2	OUT(+)	SERIAL OUT
J3-3	IN(+)	SERIAL IN
J3-4	IN(-)	SERIAL IN

SENSES FRZ EVAP TEMP	ORANGE/RED
SENSES FRZ EVAP TEMP	BLUE/RED
SENSES FRZ CABINET TEMP	BLUE/BLACK
SPEED DATA TO V SPEED CONTROL BOX	YLW W/BLACK
SPEED DATA TO V SPEED CONTROL BOX	YLW W/RED
STATUS DATA FROM V SPEED CONTROL BOX	PINK W/RED
STATUS DATA FROM V SPEED CONTROL BOX	PINK W/BLACK

PART NUMBER 3757271 REV B

WIRING SCHEMATIC
MODEL: 700 TF/I-2V

(Starting with Serial #1898164)

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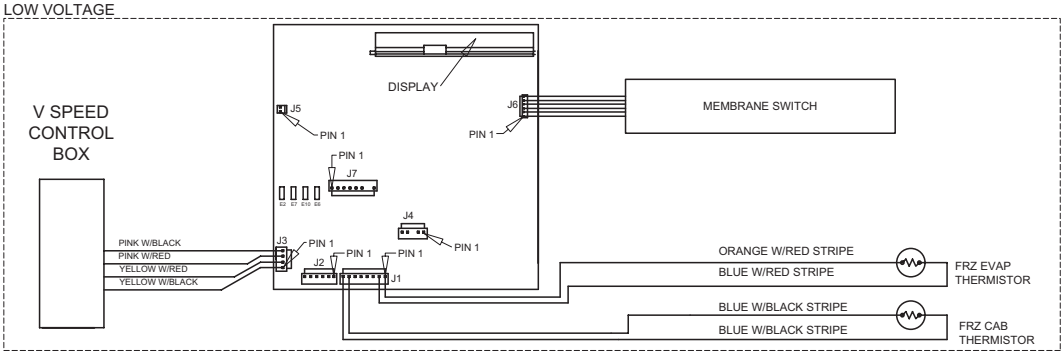
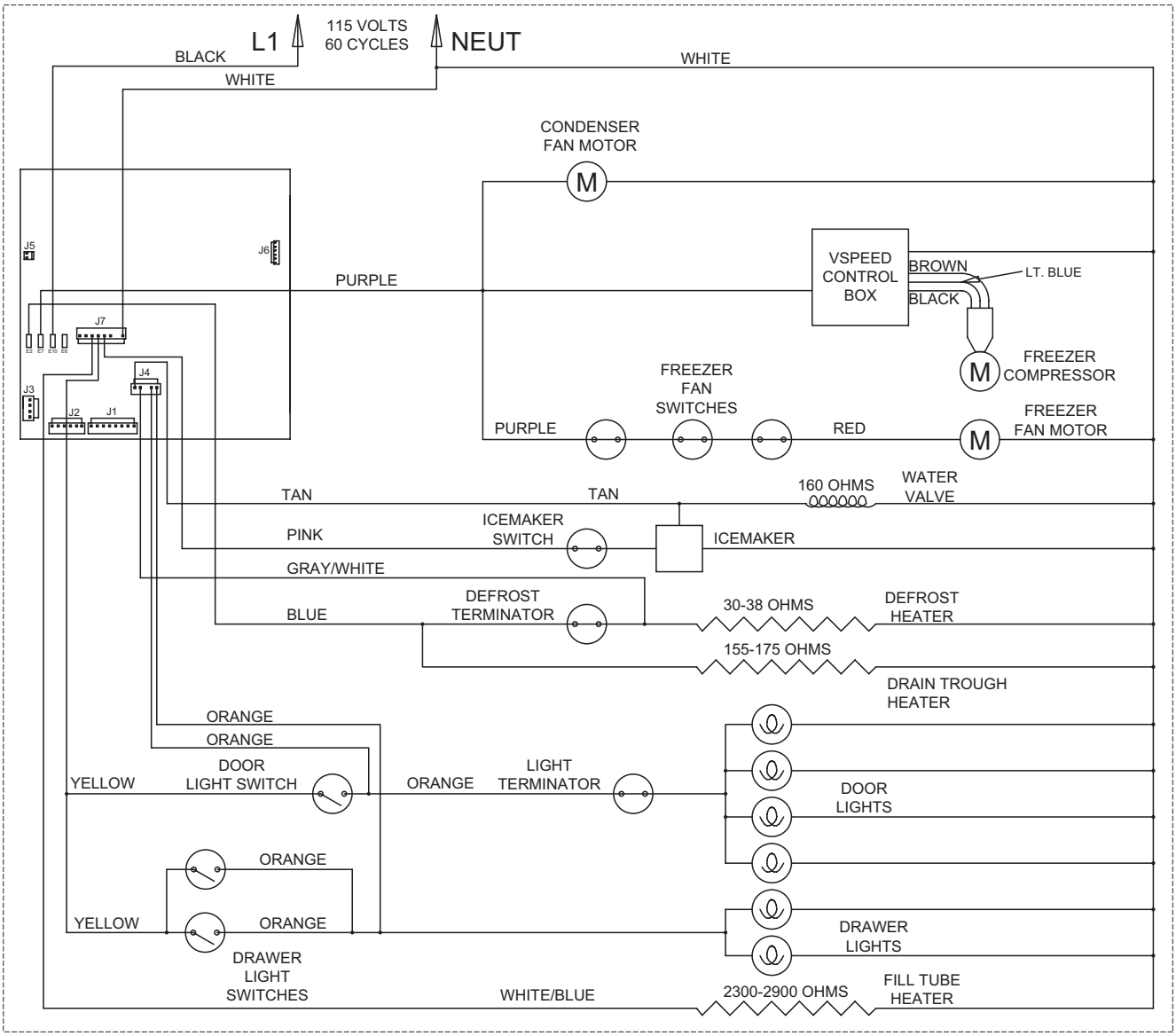
LOW VOLTAGE

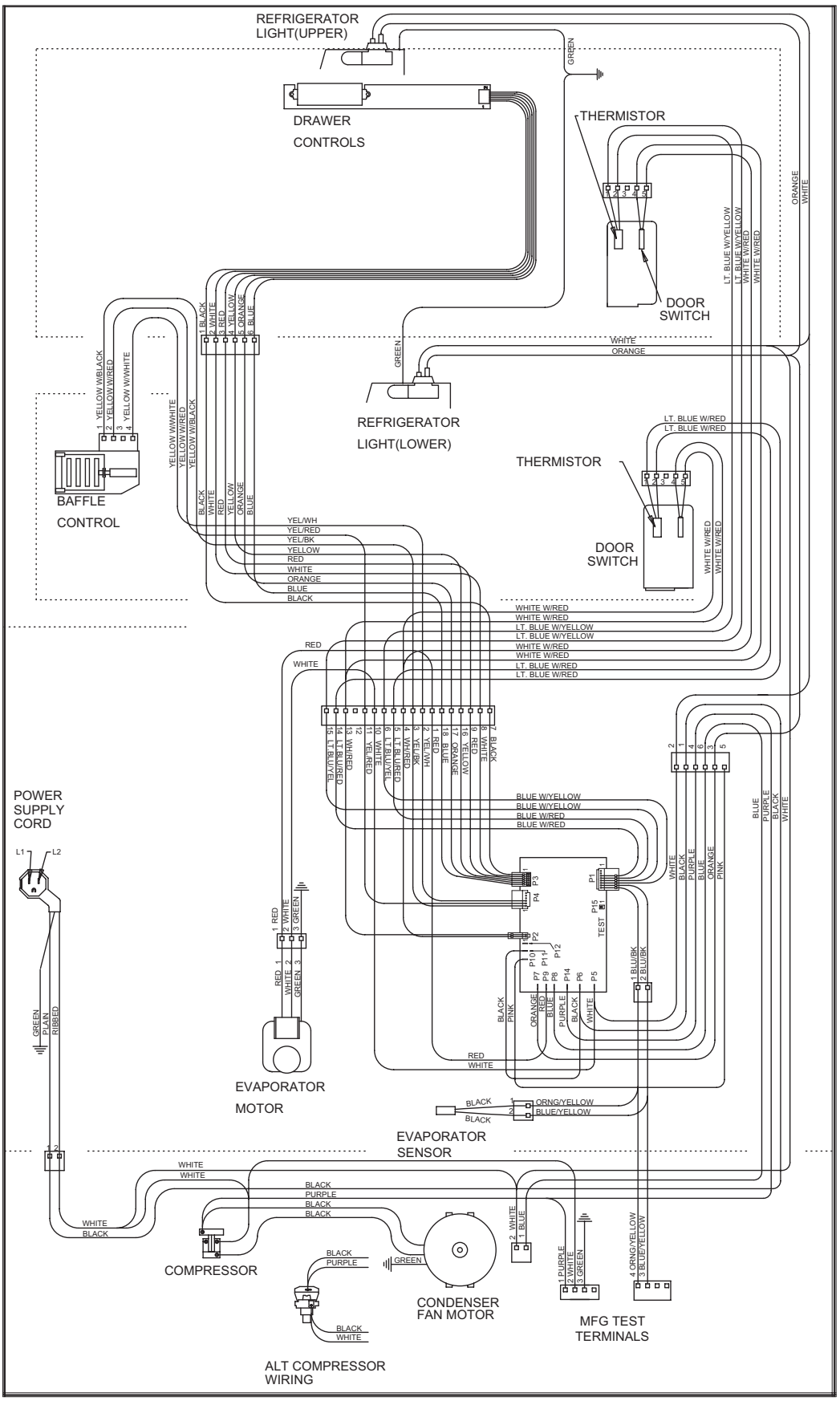


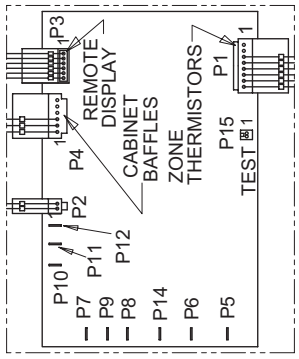
HIGH VOLTAGE



PART NUMBER 3757271 REV B

WIRING DIAGRAM MODEL 700BR-2





CONTROL BOARD DETAIL

WARNING

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AUXILIARY CHART

TERM.	No#	COLOR
P1	1	EMPTY
	2	EMPTY
	3	LT. BLUE W/RED
	4	LT. BLUE W/RED
	5	LT. BLUE W/YELLOW
	6	LT. BLUE W/YELLOW
	7	LT. BLUE W/BLACK
	8	LT. BLUE W/BLACK
P3	1	BLACK
	2	WHITE
	3	RED
	4	YELLOW
	5	ORANGE
	6	BLUE
P4	1	YELLOW/BLACK
	2	YELLOW/RED
	3	YELLOW/WHITE
	4	EMPTY
	5	EMPTY
	6	EMPTY

TERM.	DESCRIPTION	COLOR	ABBR.
P1	THERMISTORS	SEE AUX. CHART	WH/YL
P2	LIGHT SWITCH	WHITE/RED	WH/RD
P3	REMOTE DISPLAY	SEE AUX. CHART	-----
P4	CABINET BAFFLES	SEE AUX. CHART	-----
P5	L2-NEUTRAL 115	WHITE	WHITE
P6	L1-HOT 115	BLACK	BLACK
P7	LIGHTS-115V OUT	ORANGE	ORANG
P8	-----	-----	-----
P9	EVAPORATOR FAN	RED	RED
P10	-----	PINK	PINK
P11	-----	BLACK	BLACK
P12	-----	-----	-----
P13	-----	-----	-----
P14	COMPRESSOR	PURPLE	PURPL
P15	MANF TEST	-----	TEST

PART NUMBER 3756600 REV B

WIRING SCHEMATIC MODEL 700BR-2

⚠ WARNING

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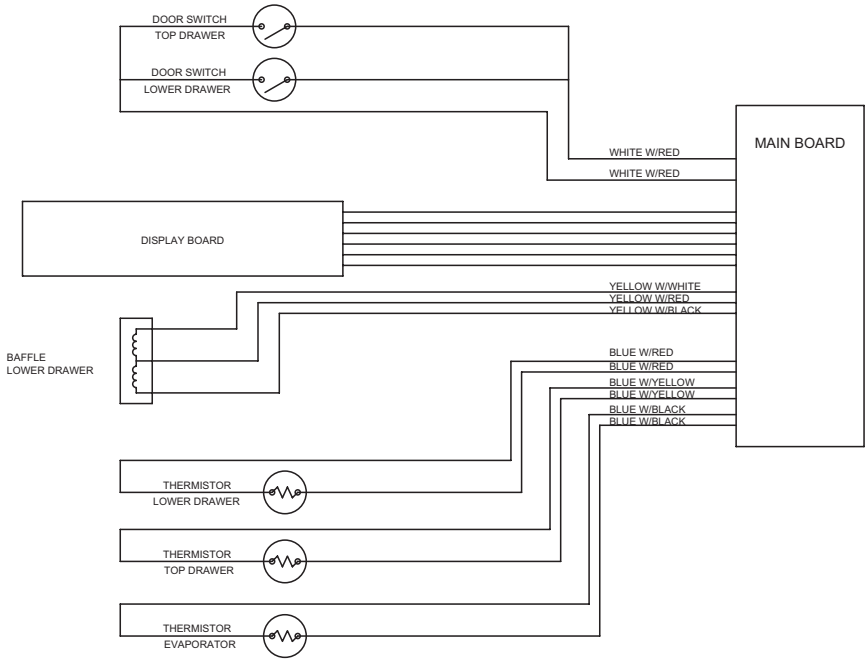
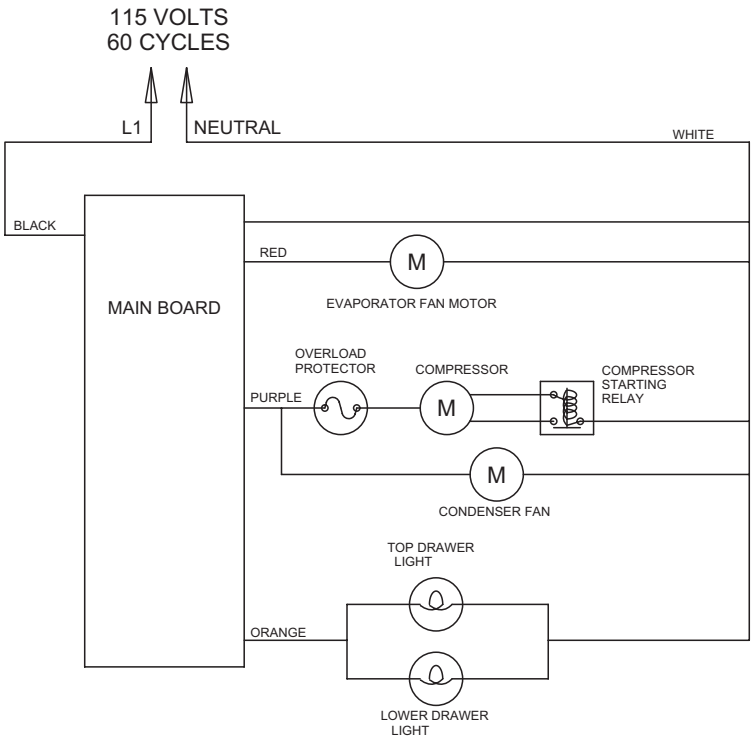
LOW VOLTAGE

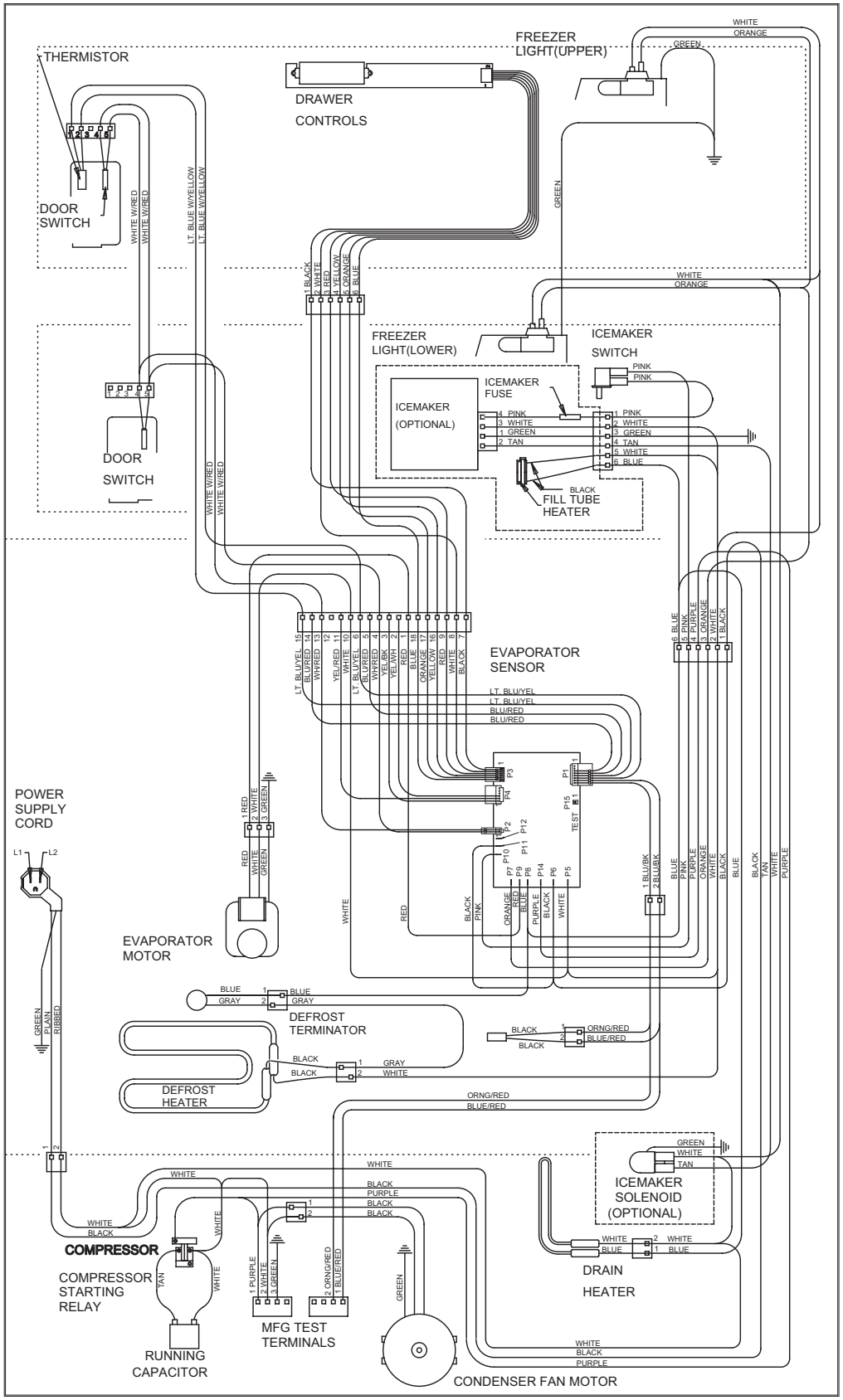


HIGH VOLTAGE



PART NUMBER 3756600 REV B

WIRING DIAGRAM MODEL 700BF/I-2



WARNING

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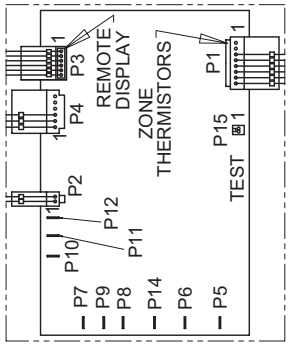

CONTROL BOARD DETAIL

AUXILIARY CHART

TERM.	No#	COLOR
P1	1	EMPTY
	2	EMPTY
	3	BLUE W/RED
	4	BLUE W/RED
	5	LT. BLUE W/YELLOW
	6	LT. BLUE W/YELLOW
	7	BLUE W/BLACK
	8	BLUE W/BLACK
P3	1	BLACK
	2	WHITE
	3	RED
	4	YELLOW
	5	ORANGE
	6	BLUE

TERM.	DESCRIPTION	COLOR	ABBR.
P1	THERMISTORS	SEE AUX. CHART	-----
P2	LIGHT SWITCH	WHITE/RED	WH/RD
P3	REMOTE DISPLAY	SEE AUX. CHART	-----
P4	BAFFLES	------	-----
P5	L2-NEUTRAL 115	WHITE	WHITE
P6	L1-HOT 115	BLACK	BLACK
P7	LIGHTS-115V OUT	ORANGE	ORANG
P8	DEFROST HEATER	BLUE	BLUE
P9	EVAPORATOR FAN	RED	RED
P10	ICEMAKER SWITCH	PINK	PINK
P11	JUMPER	BLACK	BLACK
P12	------	------	-----
P13	------	------	-----
P14	COMPRESSOR	PURPLE	PURPLE
P15	MANF TEST	------	TEST

PART NUMBER 3756712 REV B

WIRING SCHEMATIC MODEL 700BF/I-2

⚠ WARNING

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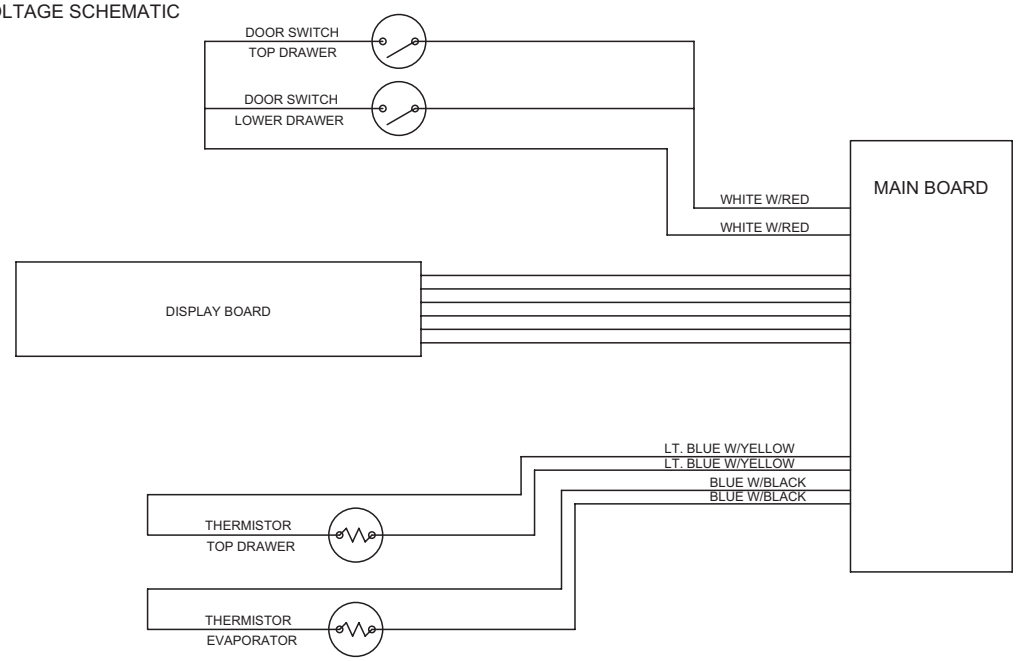
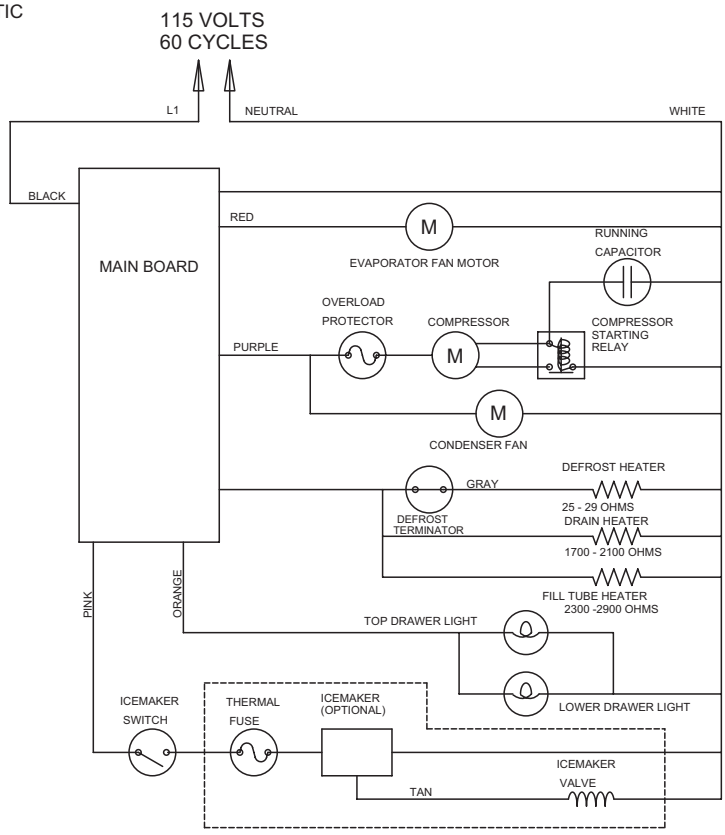
LOW VOLTAGE SCHEMATIC



HIGH VOLTAGE SCHEMATIC



PART NUMBER 3756712 REV B